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THE INVESTIGATION AND DIAGNOSIS OF ETHMOIDITIS.[1]

By D. G. CARRUTHERS,
Sydney.

IT is not my plan to weary listeners with a discussion of the routine methods used in the diagnosis of ethmoid sinus disease. We all combine the impressions gained from history, intranasal appearances and X-ray films, and all are familiar with the criteria which are followed in making a diagnosis.

I shall first touch briefly upon the incidence of disease in the ethmoid sinuses, especially in relation to a similar process in one or other of the major nasal sinuses. We know today from experience that it is reasonable to presume the existence of disease in the ethmoid cells in association with nasal polyposis and with suppurative disease of the antrum or frontal sinus. Most of us now take the ethmoid into account when dealing with these more obvious conditions. Suffice it then merely to reiterate that the ethmoid is likely to be diseased in such instances and must not be overlooked if a satisfactory result is to be achieved.

On the other hand we all encounter the patient with a bothersome catarrh in whom a search for disease in the major sinuses reveals no explanation. Likewise there may be the child with the dusky, bluish turgescence and watery nose with which we are all familiar, or it may be that we seek an explanation of headaches, visual disturbances or remote focal reactions. In these cases, too, the major sinuses will often prove to be healthy and we wish to be certain that there is or there is not an isolated infection in one of the more remote ethmoid cells. Here one must return to the study of the X-ray films. Exposure in several positions may be necessary, and careful study, especially of stereoscopic films, may be of value. We rhinologists also may resort to proof-puncture of the ethmoid and sphenoid cells in such cases. Watson Williams has adequately described the technique of such procedures. I shall only add personal experience of the results to the discussion of this method. Pus, if present, is self-revealing; but I would advise that you try to watch the outflow into the nose, as the ethmoid cells hold very little fluid, and pus may be washed away by displacement and the fluid sucked back from the sinus itself may be clean. Bacterial cultures are unnecessary if pus is found. On the other hand, my personal experience has been that if there is no pus there is also no growth on culture media. In other words, and I know Watson Williams would not agree, I find that cultures are of very little value.

There is just one other point in the differential diagnosis. We may have a patient with a bothersome post-nasal catarrh and perhaps nasal stuffiness. We are prone to think too frequently that the seat of disease must be within the sinuses and perhaps to forget that there is an extensive nasal mucosa also outside the sinuses. The glands and blood vessels of this mucosa may be over-active for reasons other than an underlying sinusitis. I feel that certain occupations, conditions of domicile, diet, general habits and allergic and endocrine factors do play a part in many such cases, although just what the factors are and how they act upon various individuals is still a matter for much

[1] Read at a meeting of the Section of Oto-Rhino-Laryngology of the New South Wales Branch of the British Medical Association on November 30, 1939.

study. In other words, if it is found that the major sinuses are not at fault, the cause of the trouble may be ethmoiditis; but we have to realize that there are still other parts than the sinus mucosa which can be responsible for catarrhal symptoms, and there may be other factors than infection to cause the trouble.

Beyond this mere outline of the incidence of ethmoid sinusitis, my present purpose is to expand a little upon the thesis that before progress in the control of ethmoid disease is to be achieved, the rhinologist must give due consideration to the practical application of a classification of ethmoid disease into at least two distinct forms of reaction, which, even if at times associated, are of widely differing habit, and are probably of different ætiology, and certainly call for at least a modification of the forms of treatment applicable to each. The two forms of reaction which I would regard as distinct are suppurative sinusitis and polypose sinusitis.

Let us call to mind the characteristics of the two types of reaction. The predominantly suppurating type is most often antritis associated with ethmoiditis. Other sinuses may, of course, also be involved. The common polypose nasal disease, on the other hand, is typically ethmoiditis with or without disease in the other sinuses; the latter, when present, may be purely suppurative or mucoid or perhaps also polypoid. Here at once is food for thought. Is there some factor in the middle meatus and ethmoid which makes that region a suitable site for some form of infecting agent to flourish? Or are there anatomical arrangements or histological structures peculiar to this region which make it particularly possible for polypi to form here?

The habit of the two forms of disease is impressive. Suppurative disease is as a rule readily eradicated surgically and tends to remain cured if dealt with adequately. If it is not cured, then in the typically suppurative form it remains for years. Recurrence as polyposis or change to the polypoid form is rare. The course of polyposis is different. Even after wide excision recurrence is more often the rule than not, and when the nose fails to get well it is as the polypose form that the disease remains or recurs. Secondary suppuration may occur, but this may be cured by drainage. The polypus formation, however, tends to recur rapidly. To my mind this habit of recurrence of polypi suggests a specific type of infection, which perhaps we may add to certain qualities of the ethmoid region, as suggested above, in seeking to explain the ætiology.

The th'rd point is the association of certain types of nasal sinus disease with disease of the lower portion of the respiratory tract. With suppurative sinusitis we find bronchitis and bronchiectasis, whereas with the polypose form allergic disease, such as asthma, is more common.

At this juncture we might appropriately consider the relationship between allergy and nasal polypi. In those cases of polypose sinusitis which I have particularly observed during the past two years, some 35 in all, definite clinical evidence of allergic manifestations was present in 40% but absent in 60%. Skin tests were carried out in a large number of these cases, and gave negative results in 66% and positive results in 33%. It will be seen that no evidence of allergy was detected in at least 60% of cases.

Let me reverse the picture. In another series of sixteen patients who appeared to be allergic, in that they suffered from hay fever-like symptoms or hay fever and asthma, polyposis was found to be present in only two cases, or 12%, and absent in 88%. In these cases too I found a much higher percentage of positive results to skin tests; in 66% there were definite reactions and in 33% no reactions to the allergens used. The question to be answered is: Does allergic disease or an allergic potentiality cause or predispose to polypi, or do polypi or some factors in their ætiology or metabolism or in the site they commonly occupy tend to excite allergic reactions in susceptible individuals? The question at present is not answerable, although I am inclined to favour the latter factors in explanation of the association of the two reactions.

In an attempt to find evidence of specific bacterial agents cultures have been made in a number of cases, with the following results. From a series of patients with the hay fever-like reactions and no polypi only *Staphylococcus aureus* has been recovered. From the patients with polypi a variety of organisms were recovered, including yeasts, *Micrococcus catarrhalis*, streptococci, mostly non-hæmolytic, Pfeiffer's influenza bacillus and several different types of pneumococci. The bacterial work has been far too small to be conclusive; so far as it has gone, however, there certainly seems to be nothing specific about the findings, except perhaps that the variability suggests that the organisms found are of secondary appearance rather than being the cause of polypose disease.

Very meekly I have asked competent investigators to consider the possible part played by a virus. Perhaps the virus element, now recognized as being associated with many of the coryzas, is responsible for the development of the polypose form of chronic rhinitis. I am not competent to enlarge upon this suggestion, except to point out to you that a virus has been definitely proved to be the cause of certain myxomatous and fibrous tumours in rabbits.

I must briefly enumerate other factors in polypose disease which may cast further light upon the ætiology. The age incidence in this series has been as follows: 13% of patients were aged up to twenty years, 43% of patients were aged between twenty and forty years, and 43% were aged between forty and sixty years. The sex incidence was as follows: 65% of patients were male and 35% were female. I think that these percentages tally fairly closely with the average in all cases. It would seem, then, that there might be further factors, perhaps endocrine, peculiar to sex and age, which predispose to the polypose form of nasal reaction.

So much for the clinical consideration. I have, during the past twelve months, submitted specimens of tissue from 26 patients for examination under the microscope in collaboration with Dr. Gillies, of the Kanematsu Memorial Institute of Pathology at Sydney Hospital. I shall not describe all the tissues to you now. Suffice it to say that epithelium, blood vessels, glands, leucocytes, connective tissue cells and stroma, and periosteum and bone have been observed. The evidence is against the idea that polypi are merely a process of distension, for even in quite large polypi the epithelium is often a continuous tissue composed of tall, closely fitting, ciliated cells. Certainly there is some distension of areolar spaces and of glands with pink-staining mucoid material; but this cannot be the whole story. Examination of blood vessels has revealed no explanation, nor have periosteal or bony changes been in evidence. A striking feature is the prominence of changes in the gland structures. An enormous distension of glands is evident in many slides, and it is around the acini and ducts and beneath the surface epithelium that the major accumulation of leucocytes is found; these cells belong mostly to the lymphocyte and plasma cells variety. Strangely enough, no great formation of eosinophile cells has been found in the allergic cases. In some sections there is evidence of rupture of the glands with escape of mucus into the areolar tissue. I am not prepared to state definitely, however, whether this rupture and the escape of mucus have been spontaneous or whether they are due to compression at operation.

It has been impossible during the course of just one year to do more than commence the investigation of the polypose reaction in the nose, and perhaps to suggest certain lines of thought to guide the direction of future work. Neither has it been possible in only ten minutes to enlarge very much upon the findings. Perhaps that is as well, with our knowledge still only in its infancy. I feel, however, that it is only by going carefully into details that we shall solve the problems of nasal disease. Much as we rhinologists have been puzzled by the problem and worried over the slow progress with it, it has been very discouraging to find how little there is in the literature to indicate that these problems have been the subject of any modern scientific investigation. Perhaps our work will act as a fresh stimulus, humble as is its present beginning.

THE HISTOLOGY OF NASAL POLYPI.[1]

By A. D. GILLIES,
Sydney.

REFERENCES to nasal polypi in standard text-books are brief and often vague. They are lesions which have not attracted the attention of pathologists, and even now their precise nature is in doubt and the factors leading to their appearance and recurrence are unknown.

In the past they have been called "myxomata", a name which is given to connective tissue tumours in which the cells or their processes have undergone gelatinous degeneration. Such degenerative changes are fairly common in tumours derived from nervous tissues and in some ovarian growths; but the resemblance of nasal polypi to such tumours is of the most superficial kind and the term "myxoma" should be dropped.

It is now generally agreed that they are not neoplastic, and in the many which have been examined at Sydney Hospital nothing has been found to support such a suggestion, except in one single polypus which appears to be different from the rest and which will be specially referred to later. It is unlikely that they owe their origin to mechanical causes, such as obstruction and the associated hawking, but such factors may play a part in their continued enlargement; the occasional rapid recurrence after removal is also against a mechanical origin. It is also unlikely that they are purely degenerative in nature, though some people may see an analogy between nasal polypi and the condition known as colloid degeneration of the skin. It seems far more likely, both from their clinical behaviour and because of their histological structure, that they are inflammatory, but not necessarily in the common restricted meaning of the term. The acute exudate which can be produced by the insufflation of protein into the lungs of a sensitive animal and the slow pulmonary fibrosis which follows the prolonged inhalation of siliceous dust are both inflammatory, and between these two extremes there is an infinite variety of responses, of which the common suppurative lesions are but special examples. The wide meaning of the term "inflammation" is stressed, as it is not implied that polypi are necessarily due to the local presence of bacteria or other noxa. The usual methods of bacteriological investigation have been applied times out of number to the investigation of nasal polypi, and a meaningless variety of organisms has been recovered. A systematic search for a filter-passing virus has not yet been made.

The histological structure of the polypi examined here has been fairly constant and the variations have been mainly in the number of mucous glands and the degree of inflammatory cell infiltration. The epithelium is usually of the respiratory type—that is, stratified ciliated columnar epithelium, with occasional mucigenic cells; but sometimes it has undergone metaplasia to the stratified squamous type, and occasionally ulceration has occurred. Usually the glands are scanty or even absent; when present they are often confined to the base, whilst the bulk of the polypus is composed of very œdematous tissue containing few blood vessels and varying numbers of inflammatory cells (Figures I and II).

The inflammatory cells are predominantly lymphocytes and their derivatives, plasma cells, and are most numerous beneath the epithelium and around such mucous glands as happen to be present. They are also densely packed beneath an ulcerated area, a point which serves to distinguish true ulceration from operative or post-operative abrasion. Polymorphonuclear leucocytes were present in very small numbers in most polypi; they were most numerous beneath ulcerated areas and in polypi which were accompanied by nasal discharge. Occasionally in nasal polypi and frequently in the epithelium of suppurating sinuses polymorphonuclear leucocytes were to be seen lying between the epithelial cells on their way from the underlying connective tissue to the surface.

One thing which came as a surprise was the frequent presence of eosinophile leucocytes in appreciable numbers in polypi which were not accompanied by asthma or other evidence of hypersensitivity. Eosinophile leucocytes are not uncommon in inflammatory lesions of the lower animals, but they are distinctly uncommon in human tissues. Some people attach much importance to them and would draw the inference that the polypi themselves are a manifestation of hypersensitivity.

As mentioned before, mucous glands were few in typical polypi, and those which were present were often confined to the base. When mucous glands were present, however, some or all of the following abnormalities were always noted: (i) periglandular inflammatory cell infiltration, (ii) distension of glands and ducts with mucus which stained more deeply than usual and which appeared to be partly inspissated, (iii) degenerative changes in and desquamation of gland and duct epithelium.

In several polypi a further finding was the escape of mucus from the lumina of the glands into the surrounding connective tissue (Figure III). Such an escape of mucus occurs but seldom in the human body, and it is interesting to bear in mind the condition of myxomatosis of the peritoneum, in which large masses of gelatinous tissue are formed in response to an escape into the peritoneal cavity of mucus from either a mucocele of the appendix or a mucinous ovarian cystoma. The histological appearances of the gelatinous tissue in the peritoneal cavity and the œdematous connective tissue of the nasal polypus present some points of similarity. It is difficult to be certain, however, that the escape of mucus from the distended glands is not due to operative trauma.

The hypertrophied folds of synovium in villous arthritis are very similar to nasal polypi, both in their naked-eye appearance and in their histological structure; but it is doubtful whether there is any true analogy between the two.

The bone to which the polypi had been attached was examined in a number of instances, but there was no evidence of osteitis or periostitis.

Reference has been made earlier to one polypus which appeared to differ in kind from the others. In it the mucous glands were so numerous that there must have been neoplastic proliferation—that is, it is to be regarded as a true adenomatous growth (Figure IV). Since the material reviewed here was collated a further large polypoid mass, composed almost entirely of actively proliferating glands, has been encountered; it was attached near the opening of the maxillary sinus and filled both the sinus and the corresponding nasal cavity; it is undoubtedly a growth and possesses an appreciable grade of malignancy.

By way of contrast with the polypi, one photomicrograph (Figure V) is inserted, showing the mucosa from a suppurating frontal sinus.

[1] Read at a meeting of the Section of Oto-Rhino-Laryngology of the New South Wales Branch of the British Medical Association on November 30, 1939.

THE EXTERNAL FRONTO-ETHMO-SPHENOID APPROACH.[1]

By HAMILTON KIRKLAND, M.B., Ch.M. (Sydney), F.R.A.C.S.,
Honorary Aural Surgeon, Sydney Hospital; Honorary Assistant Surgeon for Diseases of the Ear, Nose and Throat, Saint Vincent's Hospital, Sydney.

AN external approach to the ethmoids was first described by Jansen (1893) in a paper entitled "The Paranasal Sinuses in Chronic Suppuration". This author was particularly interested in the frontal sinus; but he stressed the point that an infection of the cell was always accompanied by ethmoid disease, and he described the cleaning out of all anterior and posterior cells, including the sphenoid.

[1] Read at a meeting of the Section of Oto-Rhino-Laryngology of the New South Wales Branch of the British Medical Association on November 30, 1939.

In 1906 Ritter wrote on Jansen's technique and added the turning of the anterior wall laterally as a bone flap.

Then in 1926 Sewell published a paper entitled "The External Operation on the Ethmoid Sphenoid Group of Cells under Local Anæsthesia". He recommended a small incision medial to the inner canthus and described in detail the cleaning out of all cells and the tying off of the ethmoid vessels and of the spheno-palatine artery. He was the first to advocate removal of the floor of the sphenoid sinus in cases in which the cells were deep and the downward trend of the floor interfered with drainage.

Ferris Smith, in 1934, adopted the same procedure as Sewell, but paid still more attention to the complete removal of the lining membrane. He added the use of gauze balls dipped in picric and acetone solution for loosening any adherent membrane. He also advocated the use of a skin graft to help in retaining the patency of the fronto-nasal duct.

Sewell's technique is now used in the Mayo Clinic, according to an article published in 1935 by Lillie and Williams, with one alteration: they revert to the Jansen incision to give more room superiorly.

External Ethmoidectomy.

The indications for dealing with ethmoid disease by external ethmoidectomy include the following: chronic polyposis and chronic infection not controlled by intranasal or transantral operative methods; acute ethmoid suppuration which has ruptured through to the orbit; chronic fronto-ethmoid suppuration with involvement of all the posterior cells; sphenoidal suppuration when stripping of the lining membrane is considered necessary; lastly, extensive osteosclerosis created by disease or by previous manipulation, so that the intranasal technique is made impossible without the use of dangerous force.

In all these cases we are dealing with long-established disease, and I believe we can assume that the mucous membrane presenting severe chronic inflammation with cystic glandular degeneration or hyperplasia, severe fibrosis, abscess formation in its various stages, chronic periostitis *et cetera*, can never return to normal. A technique which brings practically every corner into plain view in a comparatively bloodless field allows the operator to clean up the disease in many patients who otherwise would be doomed to chronic ill health.

Details of the Operation.

The operation may be performed under local or general anæsthesia. So far I have used the latter with infiltration of the tissues with 0·5% "Novocain" and adrenaline solution, some five cubic centimetres being placed around the spheno-palatine vessels posterior to the antrum and three cubic centimetres around the ethmoid vessels by injection deep along the medial orbital wall.

The nose should be packed with a weak solution of cocaine and adrenaline. The incision, which is about an inch long, begins immediately below the eyebrow and is carried some three-eighths of an inch below the inner canthus and about one-quarter of an inch medial to it. The superior palpebral vessels here require to be ligated. After the periosteum has been cut through to the bone it is elevated on the lateral side to expose the ligaments about the lachrymal sac. These are incised and the sac is turned downwards and outwards until the duct is exposed. The periosteum is then elevated over the whole of the *lamina papyracea* and the floor of the frontal sinus. Care is necessary here to avoid tearing through the posterior ethmoidal vessels. The Ferris Smith self-retaining retractor is then used. This has a slotted blade to fit over the vessel before it is ligated. The ligature is tied, a Yankhauer needle, hook and slotted ring tier being used. The vessel is then cut on the distal side of the ligature close to the foramen. The anterior ethmoidal vessels may be disregarded; hæmorrhage from these is minimal. The *lamina papyracea* is pierced by a sharp instrument and bitten away with Grünwald's forceps. The frontal process of the maxilla should be left intact if possible, to prevent the orbital contents from shutting off the fronto-nasal duct. The ethmoid cells can now be completely removed to the roof, the biting forceps being introduced through the opening made or through the nose, as circumstances demand.

This being done, the middle turbinate remains medially. This lies between the operator and the sphenoid, so it must be removed should it be necessary to get at the latter cell. The middle turbinate is punched away with the forceps in plain view. Any remnants of ethmoid cells are cleaned out, together with the lining membrane. Any adherent shreds may be loosened by a 5% solution of picric acid in 35% acetone solution, which is thoroughly applied to the entire area. The anterior wall of the sphenoid now lies before the operator. The ostium is enlarged and the anterior wall is punched away. Before the surgeon reaches the floor the mucous membrane containing the spheno-palatine vessels should be elevated in cases in which it is thought advisable to remove the floor also. The vessels may be tied by the same technique as before. The lining membrane can now be entirely stripped.

The scope of this paper does not allow of my going into details of the procedure necessary for dealing with the frontal sinus. I would merely add that complete removal of the anterior wall and floor gives, in my experience, the most trouble-free results.

Results.

I have been rather disappointed by the cosmetic result, as primary healing has not always occurred, and even when it did there remained an unsightly raised scar. I have recently seen a description by Patterson in which he advocates the making of the incision in the fold below the orbit. So far I have had no opportunity to try it, but there seem to be two objections: (i) the safety factor of working parallel with the cribriform plate is lost; and (ii) the nasal process of the maxilla would be for the most part removed and this would allow the mouth of the fronto-nasal duct to be compressed by the orbital contents.

Two cases of polyposis have shown a tendency to recurrence. In the first the middle turbinate was left in place and in the second the middle turbinates were removed except for a small stump posteriorly on which polyposis is beginning to occur. Also in this case a tremendous amount of muco-purulent secretion is being produced. Deep X-ray therapy is now being tried in the hope that fibrosis will be produced and the flow restricted.

The remaining patients in the last twelve months have done very well. Two were suffering from suppurative conditions and two from chronic polyposis.

The vault of the nose, contrary to expectations, does not appear unduly roomy after such clearing out; the orbital contents fill up a great part of the vacant space, and after a properly executed operation there is no tendency to the formation of crusts.

I have had cause to perform this operation in one case in which transantral ethmoidectomy had been done previously and quite efficiently, I had imagined. It was surprising to find how many cells remained untouched, particularly anteriorly. How much more is that likely to happen when we are working entirely intranasally and when we have only one angle of approach and a still smaller field. On the whole I am very satisfied with my experience of this approach, but realize that there is much to be learned and done to obtain consistently good results.

THE OPERATIVE TREATMENT OF ETHMOIDITIS.[1]

By B. B. BLOMFIELD,
Sydney.

IT falls to my lot to present to you two aspects of the treatment of ethmoiditis—namely, operation by (i) the nasal route and (ii) the transantral route.

[1] Read at a meeting of the Section of Oto-Rhino-Laryngology of the New South Wales Branch of the British Medical Association on November 30, 1939.

The Nasal Route.

The object of operation by the nasal route is completely to open up every cell which can possibly be reached via the nasal vestibule. It may be performed as part of the operation for the removal of nasal polypi; it may be performed when an empyema of the ethmoidal labyrinth is present; or it may form part of the intranasal frontal operation.

The main difficulties are caused by (*a*) lack of space in which to work and (*b*) lack of control of hæmorrhage during the procedure. The former may be aggravated by a badly deflected septum, and it may be impossible to proceed without performing a preliminary submucous resection of the septum. There is no doubt that this preliminary submucous resection makes the subsequent operation easier, with the exception of those cases in which a huge collection of polypi of many years' standing has dilated the nostrils widely.

Anæsthesia.

Unless the nasal cavity is full of polypi, local anæsthesia may be brought about by the application of cocaine and adrenaline to the nasal mucous membrane. This can be supplemented by their application on cotton wool attached to a probe to the region of the spheno-palatine ganglion. When, however, the nose is full of polypi, it is very difficult to obtain any great degree of anæsthesia, and any procedures carried out in the nose cause a certain amount of pain. After the polypi have been removed cocaine can be applied before anything further is done; but even then it is a difficult matter. I therefore prefer a general anæsthetic, and ether given by the intratracheal route seems to serve the purpose satisfactorily. The pharynx can be completely packed off to prevent blood from entering the bronchial tree.

The Operation.

The main landmark is the middle turbinate bone, and it is essential to locate this at the outset and to preserve it intact throughout. In one clinic where I worked overseas, one man used to practise the Sluder operation, in which the first step is the complete removal of this structure. Some of these patients died from meningitis, and it struck me that the removal of the middle turbinate subjected the patient to the added risk of injury to the dangerous area in the region of the cribriform plate. Retention of the middle turbinate acts as a barrier, preventing both injury during the operation and the medial spread of infection from the ethmoid region afterwards. When the middle turbinate has been defined, this structure is dislocated medially, and with a pair of punch forceps the *bulla ethmoidalis* is opened; then one works upwards and forwards and upwards and backwards until all the cells are gradually exenterated and their bony walls are removed, as well as the diseased contents, and the smooth, white and firm roof of the ethmoid bone is reached. Laterally one comes to the *lamina papyracea*, which, owing to its thinness, often partly comes away during the removal of the cells; and this may allow blood to enter the bony orbit, causing ecchymosis of varying degree, and later, if the patient blows his nose, there may be some emphysema in the region of the inner canthus or eyelids. For these reasons due deliberation and gentle touch are a great help. It is a good plan to proceed by stages and to work for a short while on the two sides alternately, leaving one side packed with ribbon gauze while working on the other. Sometimes, owing to osteitis of long standing, the bony walls of the cells and laminæ are peculiarly dense and hard, and in these cases it is impossible to obtain a smooth result.

At a certain meeting I attended overseas one elderly gentleman described how, when nibbling away at the cells, he kept on until he produced from the depths of the cavity a whitish material different from that which he had been producing; recognizing this as orbital fat, he knew then that he had completed the exenteration and so did not proceed any further.

This operation is necessarily an incomplete one, as, owing to the shape of the ethmoid, it is impossible to get round the corners and remove all the cells. The cells usually left unopened are those anterior to the fronto-nasal duct, in the region of the *ala nasi*, and those in the outer and lower angle between the medial part of the roof of the antrum and the orbit; fronto-ethmoidal cells and cells extending into abnormal positions will also escape. Sometimes the middle turbinate is pneumatized, forming a *concha bullosa*, and when it is taking up too much space this may be an indication for the removal of the middle turbinate.

The Transantral Route.

I consider that chronic infection never exists in any one of the paranasal sinuses alone, so that when I perform the radical operation on the antrum I always go through the medial part of the roof of the antrum and exenterate the overlying ethmoid cells as well.

Here let me quote an experience I had with one patient, who came with a chronic infection and a nose full of polypi. I removed the polypi and performed the intranasal ethmoid operation. Owing to the chronicity of the polypi the nose was widely dilated and the middle turbinate thinned out to the thickness of paper and lying jammed up against the septum. Here was an ideal patient for the intranasal operation: the middle meatus was widened out, the ethmoid cells were very accessible, and the whole tract was easily cleaned out and a clean smooth-walled cavity was left. I felt that I had completely exenterated the ethmoid labyrinth. Shortly afterwards I performed the radical antrum operation and I was amazed at the amount of ethmoid cells lying in the angle between the roof of the antrum and the orbit. After the easily accessible approach I had had in the first place I should not have believed it possible that so much could have been left behind.

When an opening has been made into the ethmoid cells they are carefully broken down and removed in the same way as was described previously. I work from the nose as well, watching the business end of the forceps at work through the antral opening. Unless patience and care are exercised it is easy to leave tags behind, particularly in the region of the medial wall of the ethmoid. Here again I am careful to leave the middle turbinate intact. I do not think it is possible to be certain that all the cells are opened even now. I recently performed the external operation on a patient on whom I had performed the transantral operation, and in each side I found a collection of suppurating cells in the region of the *ala nasi*. This explains in part why, in spite of the radical antrum and transantral ethmoid operation, a few of these cases are failures. The majority of patients appear to do very well.

The after-care of these patients is very important and may have to continue for some months off and on. At first there is a fair amount of reaction and the nose fills with mucus, which clots, forming an effective plug. I like to produce an airway as soon as possible, and for this purpose I frequently insert a piece of cotton wool soaked in equal parts of 10% cocaine and adrenaline solution. I then cleanse out the cavity with dry cotton wool swabsticks and swab out the site of operation with a 10% solution of argyrol. I also occasionally prescribe sulphanilamide as a prophylactic measure. As soon as there is an airway I prescribe menthol inhalations and argyrol drops, and these should be continued for as long as three months or more. During this time the operation site should be painted at intervals with silver nitrate solution, either 5% or 10%.

THE TREATMENT OF ETHMOID SUPPURATION AND POLYPOSIS AFTER OPERATION.[1]

By J. PARKES FINDLAY,
Sydney.

THE treatment of ethmoid suppuration and polyposis after operation will be discussed under two headings: (i) the treatment immediately after operation, (ii) the treatment of recurrent polyposis.

[1] Read at a meeting of the Section of Oto-Rhino-Laryngology of the New South Wales Branch of the British Medical Association on November 30, 1939.

The Treatment Immediately After Operation.

Treatment After External Ethmoidectomy.

No packing is required in the ethmoid cavity, as the orbital fat and tissues fill the space after a complete exenteration of the ethmoid cells. The external wound is closed by primary suture. During convalescence this wound may break down; it is then treated by ordinary antiseptic measures.

Treatment After Endonasal and Transantral Operation.

I do not in all cases pack the sinus cavities; if the bleeding is severe it is necessary to do so. There is no definite ruling on the nature of the gauze to be used. I use acriflavine (1 in 1,000), mercurochrome (1 in 1,000) or paraffin gauze; the packing is left in the cavities for twelve hours.

An airway should be established as soon as possible after removal of the gauze, by spraying the nose with cocaine and adrenaline, or by the application of cotton wool soaked in the same solution on swabs. Suction should be applied to the ethmoid cavity to remove all clots, pieces of mucous membrane, pus and any crusts; this is a most important procedure, and a portable suction apparatus is recommended for use in the wards. The cavities should be swabbed with a solution of argyrol (10%) or silver nitrate (10%) until the cavities are healthy. Inhalations should be given in conjunction with "Neo-Synephrin" drops or the emulsion; I prefer the emulsion. This procedure should be carried out for two months. Chemotherapy should be used in all acute cases for a period of forty-eight hours, especially sulphanilamide.

The Treatment of Recurrent Polyposis.

The recurrence of polypi is the greatest bugbear in ethmoid lesions, and from this stage I wish to make it clear that all treatment of this condition is applied only in those cases uncomplicated by suppuration. In my experience most cases of polyposis of the ethmoid region and adjacent area of the septum are free from suppuration, and treatment which will prevent the repeated spectacle of patients presenting themselves every year for removal of polypi is worthy of trial.

The use of radium element and deep X rays after an operation on the ethmoid sinus, in which all polypi are removed and all ethmoid cells exenterated, is recommended. The reason why I feel confident of this, shall I say, prophylactic treatment is that during the year specimens examined in our pathological department have shown that myxomatous tissue and distinct glandular areas predominated, not only in polypi from the ethmoid region, but also in those from the adjacent septum. Some state that the more nearly a polypus pathologically simulates the fibromyxoma, the more easily a complete cure is effected by surgical removal. Therefore all irradiation of this area is directed towards converting the myxomatous and glandular tissue into fibromyxomatous tissue, without causing bony necrosis of the surrounding nasal wall. From two to five days are allowed to elapse between operation and irradiation: this permits any reaction to subside and tags *et cetera* to be removed. There is a considerable difference of opinion with regard to the dosage of radium to be used. The Americans prefer a larger amount of radium element over a shorter period; English authorities do not use such a big dosage. The latest American figures to hand are as follows: in one case they gave 750 milligramme-hours; the average patient receives 400 milligramme-hours; some receive 250 milligramme-hours to each side. A typical example of their treatment is to give 100 milligramme-hours at the first sitting, followed by a further 100 milligramme-hours ten to fourteen days later, with 50 milligramme-hours at the end of a further fourteen days. The radium is used in needles three centimetres long, containing 10 milligrammes of element with 0·5 millimetre of platinum as screen. Five needles are used, making a total of 50 milligrammes of radium element; these are placed in a brass container 30 by 5 millimetres in area, one for each side if necessary. This is fitted into the ethmoid cavity and held in position by gauze packing. Unfortunately the authors do not mention the *r* unit of this dosage at the surface or in plane. Comparing the above with some English authors, the latest I am able to quote is Scott Brown (*The Journal of Laryngology and Otology*, July, 1938, page 459), who gives 40 milligrammes of radium element in four needles 3·5 millimetres long, each containing 10 milligrammes of radium screened by 0·5 millimetre of platinum, for six hours, a dosage of 240 milligramme-hours. Again, this author does not state the *r* unit of this dose.

The *r* unit of radium dosage is very important in this region, as overdosage will result in necrosis of the bony surrounding wall, with worse after-effects than the recurring polypi. The safest *r* unit in this area is not over 5,000 *r* at the surface. I prefer the larger radium dose correctly screened to give the *r* unit, as it is not necessary to leave the container in the nose for such a long period. The discomfort to the patient is very considerable.

The latest patient treated by me had a history of continuous operation for polypi extending over seventeen years. A tube of radium was applied to each side, with 25 milligrammes of radium element screened by two millimetres of platinum to each tube; the tube was fitted into a rubber cot about the thickness of a surgeon's glove, then placed in the ethmoid cavity and held in position by gauze for eight hours. This gave a dose of 200 milligramme-hours to each side, with an *r* unit of 3,800 at the surface and 1,050 at one centimetre in plane. If the resulting erythema in the area irradiated is not pronounced a further dose may be given in a month's time, half the original dose being used.

The figures I have quoted from American authors in connexion with treatment by radium covered a considerable period, and 150 patients received irradiation after operation. These authors do not mention any instances of necrosis following the use of large doses, but state that so far the results have been gratifying. Patients whom I have seen after treatment have shown no sign of recurrence; but the time factor is rather too short for me to make a dogmatic statement on this possibility. Next year I hope to publish a full report covering a two-year period.

Deep X-ray treatment in these cases is very satisfactory, as the area to be irradiated can be screened off from the rest of the face and the dose of X rays can be given without the production of any skin burns. The same result (fibrosis of this area) can be achieved without all the extra work involved in preparing radium needles and tubes, and with a shorter stay in hospital.

The dose is two-thirds of a full skin irradiation dose, which is 2,400 *r*, that is, 1,600 *r* to the area, with four millimetres of copper filtration with aluminium. The 2,400 to 1,600 *r* are given at the rate of 300 *r* each sitting, so that at least eight sittings are required. The skin of face and eyes *et cetera* are screened off with lead.

It is my intention to use both radium and X rays this coming year in alternating cases. This will provide a very valuable check on each method. In all this work there must be full cooperation with the radium and X-ray specialists, and I desire to thank the staff of the deep X-ray and radium department, Sydney Hospital, for their cooperation.

PERINEPHRITIS.

By IRWIN J. WEYMAN,
Melbourne.

PERINEPHRITIS is a disease entity characterized by chronic inflammation, non-suppurative and for most part afebrile, in the capsule of the kidney and in the perinephric fat. Clinically, it is accompanied by nephralgia and renal colic, and often by hæmaturia. According to this definition, the conception of perinephritis excludes all forms of perinephritic abscess, localized or diffuse.

The distinction made by German authors between perinephritis, or inflammation of the renal capsule, and paranephritis, or inflammation of the perirenal fat, seems neither anatomically nor clinically justified.

The recognition of non-suppurative perinephritis is old. Authors such as Rayer (1839), Picard, Feron (1860), Guéneau de Mussy (1875), Gibney (1876), Brodeur (1886), did not give an entirely precise description. They rather confuse perinephritis, presenting painful attacks, with nephralgia caused by calculus or infection. During the last decades, owing to the research work of Albarran, Casper, Israel, Legueu, Nicolich, Rovsing, Senator, Tuffier, Zuckerkandl and others the clinical and anatomical nature of non-suppurative perinephritis has been established.

Pathological Anatomy.

Anatomically we have to distinguish three forms of perinephritis: the sclerous, the sclero-lipomatous and the adherent.

The Sclerous Form.—The capsule of the kidney becomes noticeably thick, white, inelastic and firmly adherent, totally or in part, to the kidney. The capsule may show bridles at one or more points; these, constricting the capsule, produce more or less distinct grooves in the renal parenchyma. The perirenal and perihilar fat may remain normal or may become traversed by fibrous bridles, which render the fatty layers more dense.

The Sclero-lipomatous Form.—The sclerotic process extends until it reaches the perirenal fat, which becomes hardened, fibrous and adherent to the capsule of the kidney and to the renal bed. This process extends nearly always to the fatty tissues of the renal pedicle. It therefore becomes difficult and dangerous to separate the blood vessels from the strangulating tissue. By palpation through the wound, one gets the impression that the kidney is enlarged, hard and fixed. When the kidney has been freed from the lipo-sclerous layer, it presents itself often as small, violet-coloured, congested and of abnormal toughness. These pathological changes are sometimes localized chiefly around the renal hilum, constituting the condition termed "perihilitis" by Pousson. The sclerotic process in these cases may become so accentuated that on palpation of the pelvis of the kidney one may get the impression of an intrapelvic concretion. The inflammation of the fatty tissue is often not limited to the perirenal tissue alone. It may extend along the ureter, especially in the superior part, enfolding it into a canal of hard lipo-sclerotic, cicatricial tissue. Surgical isolation of the ureter will then be achieved with great difficulty and may even be quite impossible.

The Adherent Form.—The capsule of the kidney and the perirenal fat are, in general, normal in appearance. They present at various points, especially near the pelvis of the kidney and the inferior pole, fibrous adhesions closely fixed to the kidney, to the pelvis and to the superior part of the ureter. These adhesions often take the form of a fibrous cord, surrounding the kidney along its equator and dividing it into an hour-glass shape. The condition of the kidney is very variable. In advanced cases the organ presents a remarkable degree of atrophy; it is small, lobulated, violet-coloured and densely fibrous. The renal pelvis is impalpable through the layer of sclerotic tissue. When the process is not so extreme, so that only the capsule of the kidney is affected, the viscus may retain its normal shape and size and will not present macroscopic pathological changes. When a microscopic examination is made, however, inflammatory changes are in general not lacking, and are indicative of either parenchymatous or interstitial nephritis. These changes differ, however, from the classical generalized nephritis, in that they are not diffused over the whole of the kidney, but are noticeably localized to the vicinity of the pelvis and to parts of the cortex. In some of my cases I did not observe microscopic changes in the kidney parenchyma. I therefore conclude that these forms were primarily capsular.

Ætiology and Pathogenesis.

The ætiology of non-suppurative perinephritis is often rather obscure and difficult to determine. It may obviously arise from renal lesions, such as tuberculosis, calculus, syphilis and tumours. The ætiology is more difficult, and often even impossible, to determine in apparently primary cases. According to some authors (Poncet, Leriche and others) it could be a form of inflammatory tuberculosis of proliferative, fibroblastic type. Syphilis may be an important cause. Although both of these diseases may affect the renal apparatus, it seems that the more frequent and ordinary cause is transmission of the common infections (*Bacillus coli*, streptococci, staphylococci) from the renal pelvis or from the intestine. In regard to infection of pelvic origin, I have often been able to identify microorganisms in the urine obtained by catheterization of the pelvis on the affected side, while the urine from the other kidney was sterile.

With regard to the possibility of infection of intestinal origin, Lockwood, Salet, Rouvière, Hovelaque and others demonstrated the existence of lymphatics which form a communication between the lymphatics of the appendix, caecum, and ascending colon and those of the kidney, ureter and capsule of the kidney. The ease with which infection is thus propagated from the intestine to the kidney will be obvious. This thesis is confirmed by the fact that in 80% of cases of perinephritis the lesion is localized to the right side.

Symptomatology.

Pain.

The symptomatology is dominated first by pain and secondly by hæmaturia. The distribution of the pain is determined by the nervous relationship of the kidney; but it may be referred to a distance, either by radiation or through communicating branches, or by both means.

To understand the distribution of renal pain, the nervous anatomy of the kidney must be briefly recapitulated. The intrinsic nervous system of the kidney derives from the renal plexus, receiving branches from the sympathetic and parasympathetic or vagal system. The sensory and vasomotor fibres of the sympathetic come from the great neurovegetative centre, the solar plexus, and principally through the great and lesser splanchnic nerves. The nervous fibres from the renal plexus accompany the renal vessels into the kidney. The renal plexus sends anastomotic filaments to the suprarenal capsules, to the superior mesenteric plexus and to the spermatic plexus. In consequence of this anastomosis, the renal plexus is in direct relation to the following nerves: (i) the renal plexus of the opposite side; (ii) the nerves of the suprarenal capsules; (iii) the spermatic, vesical and ureteral plexuses; (iv) the superior mesenteric plexus. These are the direct nervous communications; but the kidney is in contiguity with other nerves. The posterior surface of the kidney rests on the *musculus quadratus lumborum*, where it is in immediate contact with three nerves, namely, the twelfth intercostal and two collateral branches of the lumbar plexus, the ilio-hypogastric and the ilio-inguinal nerves. The twelfth intercostal nerve, passing parallel to the inferior border of the twelfth rib and across the costal insertions of the *quadratus lumborum*, enters between the transversus and the oblique muscles. Its anterior branch perforates the rectus muscle and terminates in the rectus sheath. The lateral branch traverses the external oblique muscle, crosses the iliac crest and is distributed to the gluteal muscles. The ilio-hypogastric nerve, leaving the *quadratus lumborum* and perforating the transversus muscle, passes near the crest of the ilium, and giving off a branch to the gluteal muscles, divides into two branches. Of these, the abdominal branch is distributed to the rectus sheath; the genital branch penetrates the inguinal canal and terminates in the skin of the scrotum or the *labia majora*. The ilio-inguinal nerve follows a course almost parallel to the ilio-hypogastric nerve and is distributed to the rectus sheath and to the skin of the scrotum or labia.

The complexity and multiple anastomoses of these nerves explain not only the localization of the pain, but the fact that it may be referred to the whole of the urinary system and even to the abdominal viscera.

Let me point out briefly the localization of the pain corresponding to the terminations of the nervous pathways mentioned above. Pasteau distinguishes ten painful points: (i) The costo-vertebral point, which is in the angle formed by the last rib and the external margin of the vertebral column. (ii) The costo-muscular point, which is situated at the apex of the angle formed by the external margin of the lumbar muscles and the inferior border of the twelfth

rib. These two points correspond with the posterior surface of the kidney. (iii) The sub-costal point, which is situated underneath the anterior extremity of the tenth rib. It corresponds with the anterior surface of the kidney. On the right side, it may be confused with the painful point associated with the gall-bladder. (iv) The para-umbilical or superior ureteric point, also called the point of Bazy. It is situated in the horizontal line of the umbilicus, one inch from the mid-line. (v) The median ureteric point, which lies at the intersection of a horizontal line passing through the anterior superior iliac spine and a vertical line passing through the spine of the pubis. It may be confused with McBurney's point, the site of referred appendiceal pain. (vi) The inferior ureteric point, corresponding with the intramural portion of the ureter. It is easily determinated in women by vaginal examination, but is more difficult to demonstrate in men by rectal examination. When the finger is pressed against the infero-posterior wall of the empty bladder, pain is provoked on the affected side. (vii) The supraintraspinous point or point of Pasteau, which is situated underneath the anterior superior iliac spine. It corresponds with the course of the lateral cutaneous nerve of the thigh, and pain over this point is found in all cases of renal disease. For its determination pressure should be exerted with hooked index finger behind the iliac spine. (viii) The inguinal point corresponding with the termination of the ilio-hypogastric and ilio-inguinal nerves. It is situated at the level of the external inguinal ring. (ix) The subpubic point of Bazy, which is situated immediately above the pubis, one inch from the mid-line. It corresponds with the pubic branch of the ilio-inguinal nerve. (x) The lateral suprailiac point, situated half an inch above the mid-point of the iliac crest. It corresponds with the emergent point of the perforating branch of the twelfth intercostal nerve.

The origin and significance of these points can be explained as follows. There are two classes of painful points. The first comprises the points at which pain is provoked by more or less direct pressure on the affected organ. Such are the costo-vertebral and costo-muscular points, corresponding with the posterior surface of the kidney. The subcostal point corresponds with the superior pole of the kidney and the superior ureteric point with the renal pelvis and the superior third of the ureter. The inferior ureteric point corresponds with the inferior third of the ureter. The points of the second class are associated with pain which is caused either by compression of, or inflammation around, those nerves in contact with the kidney (the twelfth intercostal, the first lumbar, the ilio-hypogastric and the ilio-inguinal). Such are the ureteric and inguinal points and that of Pasteau. Finally, there may exist painful cutaneous zones (zones of Head) corresponding with the kidney and ureter. The cutaneous zones are innervated by the last two pairs of dorsal nerves and by the first lumbar nerve.

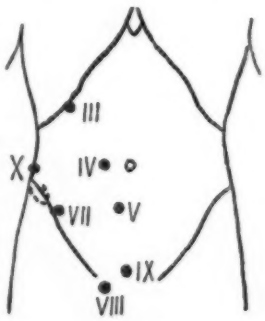

FIGURE 1.
Diagram showing some of Bazy's painful points (adapted from Corning).

From this enumeration of painful points, it will be realized how variable is the distribution of pain and how great are the consequent chances of diagnostic error. Especially is this so if the pain is localized to the right side of the abdomen, as is commonly the case.

The pain caused by perinephritis has no specific character. It may be localized (intercostal, lumbar, abdominal) or may shift from one to another of the points enumerated. Its intensity is variable. In some cases it may have the character of a definite renal colic, with maximum intensity at one point, and radiating along the nervous pathways; and it may be accompanied by vomiting, dysuria, frequency of micturition or oliguria. In other cases the pain appears at intervals, but, during the period between attacks, remains as a diffuse discomfort or a sense of weight in the lumbar region. In other cases the pain is limited to a continual or intermittent feeling of heaviness.

In one of my cases the pain had a distinct postprandial character appearing about one to one and a half hours after a meal. This pain, a typical intense colic, could be provoked at will by the administration of one or two pints of liquid. The explanation of this singular reaction was found at operation, when an annular constriction of the renal capsule was discovered. This constriction acted as a kind of girdle, compressing the kidney at its equator. The renal congestion, with consequent increase in volume during the phase of augmented secretion, met this constricting girdle. In this way pain was manifested after meals and after the ingestion of liquids. The patient was a girl, aged fifteen years, who had already undergone appendicectomy without relief. Renal decapsulation, however, completely restored her to health.

The frequency of pain is also variable. Sometimes the attacks are repeated at very short intervals, for example, every second or third day. They may, however, even occur several times a day. In some cases patients have an interval of some weeks or even of months, the pain reappearing in the same place or shifting to other painful points.

Hæmaturia.

The second important symptom, hæmaturia, is less common. It may appear without apparent cause, the patient feeling well. It may appear at any time, day and night. By this characteristic it is distinguishable from hæmaturia produced by calculus, which occurs usually during the day. Its intensity is very great, the urine being dark red in colour, as occurs in hæmorrhage from the parenchyma. Slight hæmaturia, such as occurs in calculus, is rarely observed. Hæmaturia may last sometimes for days and weeks, but may cease suddenly. It is rapidly influenced by hæmostatics, but very little by rest in bed. It is a congestive hæmorrhage. This may be demonstrated at operation by the fact that the kidney is usually found to be congested and wine-coloured, in consequence of constriction by sclerotic tissue. Incision of the capsule will suffice frequently to restore the normal colour of the kidney. I have more than once noted, when catheterizing immediately after operation the bladder of patients who had been operated upon in the stage of active hæmaturia, that the colour of the urine had again returned to normal.

There may be no other symptoms than pain and hæmaturia. The urine is sometimes clear, but in other cases it may be cloudy because of the presence of leucocytes and microorganisms.

Diagnosis.

The diagnosis of perinephritis is made by exclusion. The principal symptoms being non-specific and simulating those of other conditions, the diagnosis must rest upon scrupulous investigation. The positive data are somewhat scarce and allow of various interpretations. Palpation may disclose particular resistance over the renal bed, although outlines will be diffuse and indeterminate. The inferior pole of the kidney is not perceptible and its outlines merge with the perirenal fat. When the patient draws a deep breath, one will observe that the palpable mass in the renal angle has not the normal degree of mobility. The enlargement and immobility suggest an adhesive perirenal process. This uniform mass, so difficult to delimit, but never extending beyond the renal bed, is the perirenal fat, hardened and now forming one mass with the kidney. Tumour masses may extend beyond the renal bed.

Bimanual palpation does not give the sign of ballottement, but provokes pain of variable intensity, possibly lancinating in type. Pressure on the above-mentioned painful points will provoke more or less severe pain; but it is only infrequently that pressure provokes pain in all the points together. Sometimes it is the superior ureteric point, sometimes the medial ureteric point, and in other cases the intraspinous point which is sensitive to pressure. As has already been stated, the vicinity of these painful points to McBurney's and Lanz's points, and the absence of specific urinary symptoms (pyuria, dysuria, scalding on micturition) can lead to a mistaken diagnosis of appendicitis. Complete urological examination (catheterization of the ureters, functional tests, pyelographic examination)

ILLUSTRATIONS TO THE ARTICLE BY Dr. A. D. GILLIES.

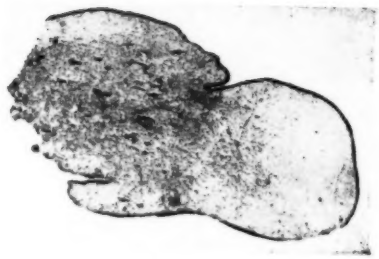

Figure I.
Typical polypus (× 4).

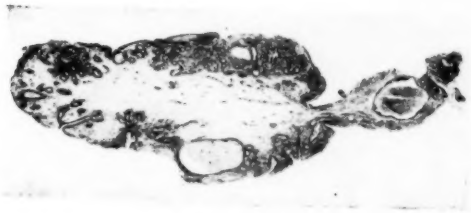

Figure IV.
Suppurative sinusitis (× 100).

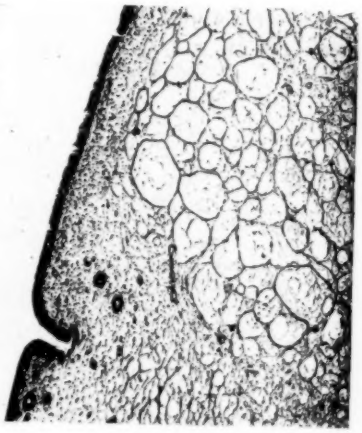

Figure II.
Typical tissue from a polypus (× 32).

Figure III.
Escape of mucus from distended ducts (× 32).

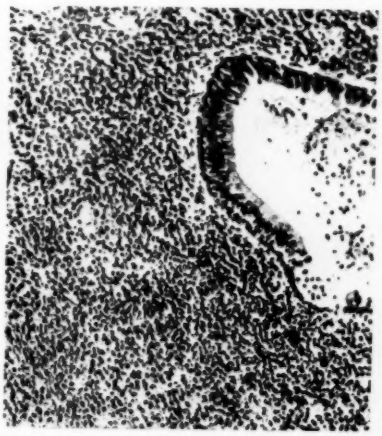

Figure V.
Adenomatous polypus (× 3).

ILLUSTRATIONS TO THE ARTICLE BY Dr. DOUGLAS REYE.

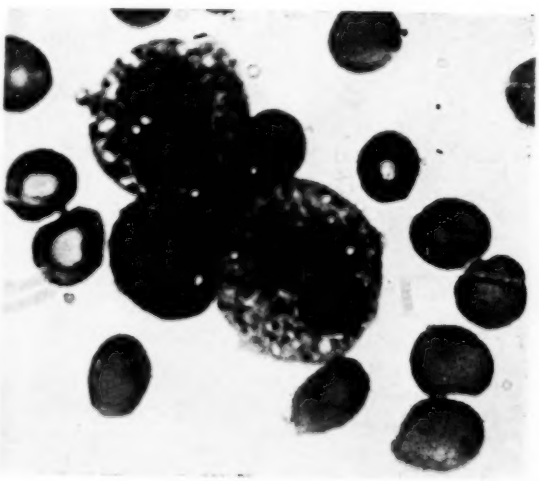

Figure I.
A blood film (high magnification) showing two eosinophile cells and one neutrophile cell. Note the relative size of these two types of cell and the lobulation of the eosinophile nucleus with numerous vacuoles and variation in the size of granules.

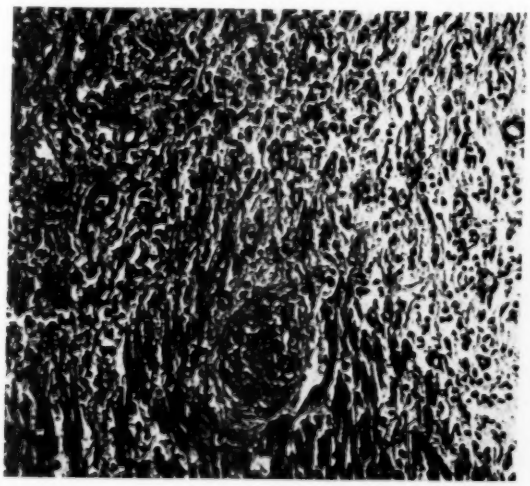

Figure II.
The heart wall, seen with the low power of the microscope, showing destruction of muscle tissue, infiltration by eosinophile cells and occlusion of a vessel.

ILLUSTRATIONS TO THE ARTICLE BY DR. IRWIN J. WEYMAN.

FIGURE II.

Pyelogram with indistinct shadow, caused by difficulty in filling up the renal pelvis, compressed by fat (peripyelitis). Symptomatology: pain of colic type, with vomiting and hæmaturia.

FIGURE III.

Excretion pyelogram: normal on the left side; on the right side pelvis of "camel's hump" type. Ureter tortuous, dilated in segments. Symptomatology: pain in the *fossa iliaca*.

FIGURE IV.

Right pyelogram: large renal shadow, pelvis and calyces atonic. Symptomatology: lumbar pain, radiating towards the hip.

FIGURE V.

Right pyelogram: atonicity of the pelvis and ureter. Kidney rotated on its long axis. Symptoms: profuse and painless hæmaturia, diurnal and nocturnal.

FIGURE VI.

Left pyelogram: pelvis atonic, peristaltic disturbance of the ureter, which is deviated toward the vertebral column. Symptoms: abdominal pain.

FIGURE VII.

Right pyelogram: pelvis and ureter atonic; peristaltic disturbance of the ureter with segmental contractions. Symptoms: sense of heaviness in the loins and the bladder.

is of vital importance in diagnosis, because it permits the elimination of affections of the renal parenchyma and of the urinary tracts.

The renal function usually remains unaffected by perinephritis. Sometimes, however, there is a slight deficiency in the affected kidney. The urine obtained from the latter may be normal and sterile. Streptococci, staphylococci, *Bacilli coli* or other organisms may, however, be present. Catheterization of the ureter of the affected side does not usually present anomalies. Sometimes, however, the advance of the ureteric catheter meets with difficulties, giving a sensation of a rigid ureter with reduced lumen. This fact may be attributed to two causes, namely, periureteritis, frequently accompanying the perinephritis, and inflammation and œdema of the ureteral mucosa. Finally, the examination of the bladder may give evidence of a congestion of the vessels in the papilla of the affected side, while the rest of the viscus is normal.

Radiological examination is of great importance. It may often reveal an enlarged renal outline; the renal margins may be blurred and may merge with the surrounding tissues. The margin of the psoas muscle may lose its normal outline, blending with the shadow of the renal bed. Ascending pyelographic examination may reveal variable appearances, the interpretation of which requires long experience. In one group of patients the pyelograms may reveal complete normality in form, size and position. The quantity of injected liquid varies from six to ten cubic centimetres. In these cases the diagnosis can be reached only by exclusion. In another group of cases the pyelogram reveals normality in size and position, but the shadow of the pelvis, and sometimes of the ureter, is grey and lacking in density, because the pelvis does not admit more than two to three cubic centimetres of opaque fluid (Figure II). There is a certain rigidity of the wall of the pelvis, hindering the injection of the ordinary quantity of fluid, notwithstanding the apparently normal dimensions. This observation is often of vital importance, as it enables one to determine the existence of an inflammatory process, whether in the pelvis or in the perihilar tissue. This inflammation renders the pelvic wall inelastic. In the third group of cases, the pyelogram reveals notable pathological changes. The pelvis and the calyces are dilated and atonic (Figure IV). The shadow sometimes seems to be rotated, appearing to the observer as seen from the flank instead of from the front (Figure V). The ureter is also dilated, sometimes tortuous (Figure VI), sometimes presenting isolated swellings (a kind of "rickety rosary") indicating disturbance of motility (Figure VII). Slight nephroptosis is frequently observed.

Finally, the presence of hæmaturia will assist diagnosis, provided that it is not caused by such pathological changes in the kidney as tumours, calculus, tuberculosis or hydronephrosis, and that it is really due to congestion. It should be remembered that the presence of blood-clot in the renal pelvis renders the interpretation of a pyelogram still more difficult.

The diagnosis of non-suppurative perinephritis is possible only by the method of exclusion after complete urological and radiological investigation, correlating all the symptomatology.

Therapeutics.

The treatment of gross non-suppurative perinephritis is surgical. Indeed, medical treatment (diathermy, antispasmodics, thermal measures) has some temporary value, but is not capable of producing permanent relief of the congestion and of the sclerotic process. Various surgical proceedings have been devised in order to free the kidney and improve the circulation. In order of importance, these are: (i) nephrolysis, that is, the freeing of the kidney from its fatty capsule, without interference with the true renal capsule; (ii) capsulotomy, or incision of the true renal capsule; (iii) decapsulation or extirpation of the true renal capsule; (iv) denervation of the kidney or Papin's operation; (v) nephrotomy or incision of the parenchyma of the kidney; (vi) nephrectomy.

Ordinary nephrolysis may prove efficient in cases of sclero-lipomatous perinephritis without adhesion of the true capsule. Since, however, it is impossible, even with the kidney exposed, to determine exactly whether the clinical syndrome is due to pathological changes in the fatty capsule only, it is advisable to proceed to free the organ from its true capsule.

Capsulotomy is an incomplete operation which is a poor substitute for decapsulation.

Renal denervation, a most delicate operation, is recommended in cases of nephralgia of non-inflammatory, perirenal origin. In perinephritis, this operation increases the renal blood circulation and congestion and may even intensify the pain.

Nephrotomy and nephrectomy are not justifiable in the great majority of cases, since satisfactory results may be had by less mutilating operations.

The most appropriate and most rational operation in cases of chronic non-suppurative perinephritis is decapsulation of the kidney. In order to be effective, decapsulation must be completed by the freeing of the renal pelvis and ureter from the fat and from adhesions, and by the removal of the whole of the fatty tissue from the renal bed. The operative technique is not difficult. The usual lumbar incision is made and the perinephric fat is opened. After isolation of the kidney and of the true capsule, the latter is incised for a quarter of an inch upon the convexity of the kidney without the parenchyma being injured. Through the opening, a grooved director is introduced, first towards the superior pole and later toward the inferior pole. With a bistoury, the capsule is incised along the director and then detached carefully from both sides by means of the director, or preferably with the finger, down to the renal hilum. When the capsule is detached, it is cleared away with scissors. One may then proceed to the freeing of the pelvis and ureter from the surrounding fat. As this is tenaciously attached, one must proceed with great caution to avoid any injury to the wall of the pelvis or to the ureter. The kidney and the ureter being freed, one proceeds to extirpate the whole of the fat from the renal fossa. This proceeding is of cardinal importance, because if this fat is not extirpated, it may form an isolating stratum between the kidney and the muscles of the renal bed. It may then hinder good fixation of the kidney, when the organ is deprived of its anatomical means of fixation. On the contrary, when the fat is extirpated *in toto*, the kidney makes direct contact with the muscles, becomes solidly adherent and immobile.

In order to maintain the kidney in the proper position and to enable it to become fixed by the formation of adhesions, two or three catgut sutures are used to unite the residue of the *fascia pre-renalis* to the *quadratus lumborum* muscle. In this way, a hammock is formed, preventing ptosis of the kidney beyond its proper bed, until it becomes fixed by adhesions. The wound is sutured in three layers, the renal bed being drained by means of a rubber tube.

The operation gives great relief to the patient and is nearly always followed by the disappearance of all morbid symptoms.

Summary.

Non-suppurative perinephritis represents an independent nosological entity, generally characterized by lumbar, lumbo-abdominal or sacral pain. This is particularly localized in special points, which correspond either with the kidney and the ureter or with the course of the nerves related to, or in contact with, the kidney.

The painful symptomatology may be accompanied by hæmaturia of varying intensity.

The diagnosis of perinephritis can be formulated only after careful clinical, urological and radiological investigation, to the exclusion of all other forms of renal disease.

As the disease is noticeably more frequent on the right side than on the left, it follows that a right-sided abdominal lesion requires careful evaluation for possible errors in the interpretation of pain, especially when the urine is normal.

The most rational treatment, in appropriate cases, is decapsulation of the kidney, extirpation of the whole of the perirenal fat and temporary fixation of the kidney, until the formation of adhesions, with two or three points of support.

Reports of Cases.

A CASE OF ACUTE EOSINOPHILIC LEUCHÆMIA.

By DOUGLAS REYE,

From the Department of Pathology, the Royal Alexandra Hospital for Children, Camperdown, Sydney.

Clinical Record.

J.L., a boy, aged five and a half years, had a history of scarlet fever, measles and tonsillectomy. The present illness, as elicited from the parents, was of eight days' duration. The child was on a holiday with his parents and appeared to be in good health till January 1, 1940. On this date he became restless, vomited and complained of abdominal pain. He was admitted to the Royal Alexandra Hospital for Children on January 9, 1940, eight days later.

Examination on his admission to hospital revealed a pale, languid, fretful boy. The abdominal pain had disappeared and no abdominal tenderness was elicited. The liver edge was just palpable below the costal margin; the spleen was not palpable. There were no superficial petechial hæmorrhages and the superficial lymph glands were not enlarged. There was no œdema. Clinical examination revealed no pulmonary abnormality. Percussion revealed enlargement of the heart. Mitral systolic and diastolic murmurs were detected, together with an aortic systolic murmur.

The child's condition remained unchanged for forty-eight hours; his temperature ranged from 100° to 102° F. and his pulse rate varied from 140 to 160 per minute until January 11, 1940, when a sudden pronounced deterioration occurred. The patient then became semi-comatose and delirious; he continued in this state till death on January 13, 1940.

The following pathological investigations were made. An attempt at culture from the blood resulted in no growth of organisms; the blood was taken on January 9, 1940, when the child's temperature was 101° F. The blood sedimentation rate was estimated on January 9, 1940; it was five millimetres after on hour and eight millimetres after two hours. A blood count on January 9, 1940, showed that the leucocytes numbered 160,000 per cubic millimetre; on January 12, 1940, they numbered 150,000 per cubic millimetre. No appreciable change had occurred in the blood count between January 9 and 12; the following are the results of a full count performed on the latter date:

Red corpuscles, per cubic millimetre	2,690,000
Hæmoglobin value (Sahli)	45%
(7·8 grammes of hæmoglobin *per centum*.)	
Colour index	0·86
Corpuscle index	52·0

Some microcytes were present, but the majority of the cells were normal in size, shape and colour.

	Per Cubic Millimetre.
Leucocytes	150,000
Polymorphonuclear neutrophile cells	20,400 (13·6%)
Lymphocytes	12,900 (8·6%)
Monocytes	3,000 (2·0%)
Polymorphonuclear eosinophile cells	109,200 (72·8%)
Eosinophile metamyelocytes	1,200 (0·8%)
Eosinophile myelocytes	900 (0·6%)
Neutrophile myelocytes	300 (0·2%)
Neutrophile metamyelocytes	1,500 (1·0%)
Basophile cells	600 (0·4%)
Blood platelets	200,000

This differential count was made on a count of 1,000 leucocytes. Two eosinophile cells and one neutrophile cell are illustrated in Figure I.

Autopsy.

Permission was obtained to open the thorax and abdomen, and autopsy was performed approximately two and a half hours after death. The body was that of a well-nourished, well-developed boy; it was still warm. Generalized *rigor mortis* and early hypostatic congestion of the dependent parts were present. The superficial lymph glands were palpable, though not enlarged, and there were no petechial hæmorrhages in the skin.

Thorax.

The thymus was small and pale; the pleural cavities contained a small quantity of transparent straw-coloured fluid, but the visceral and parietal pleura was smooth and glistening.

The lung tissue was pale and heavy with œdema; the cut surface was moist and exuding fluid freely from alveoli and bronchi. There were no areas of pneumonic consolidation, but a small, firm, red, wedge-shaped infarct was present on the anterior border of the lower lobe of the right lung, covered by a cloudy pleural surface and raised above the surrounding lung tissue. The cut surface of this infarcted area was dry, with no evidence of sepsis.

The parietal pericardium was normal, though the pericardial sac contained an excess of clear fluid. There were approximately a dozen small petechial hæmorrhages beneath the visceral pericardium at the base of the left ventricle, and these stood out clearly against a background of pale lemon-yellow subpericardial fat, which was present in excess. The heart was considerably enlarged, owing to dilatation of the chambers; this was most pronounced on the right side. The musculature was pale, flabby and friable, and at the apex of the left ventricle it was decreased in thickness. In the left ventricle, adherent to the musculature and in part replacing it, and filling many of the interstices between the papillary muscles, was a pale, friable substance with a yellow, rough surface.

Abdomen.

The liver was only slightly enlarged; the cut surface was pale and glistening and mottled in light red and yellow. The gall-bladder was filled with thin golden bile, and the bile ducts were patent.

The spleen was enlarged to about three times its normal size for the child's age. The cut surface revealed a homogeneous, pale red, firm pulp, against which several large and numerous small infarcts stood out in clear contrast.

The kidneys were of normal size, with a pale, slightly swollen cortex and slightly congested medulla.

The mucous membrane of the stomach was congested, and within its lumen were milk curds and altered blood. The only abnormality in the remainder of the alimentary tract, which showed normal Peyer's patches and lymph follicles, was a small area of submucosal hæmorrhage in the pelvic colon.

The paratracheal and peribronchial lymph glands were slightly enlarged, soft and congested. The mesenteric glands were slightly enlarged and soft, whilst the paraaortic chain was small, soft and congested.

Bone Marrow.

The marrow expressed from the ribs and sternum was fluid and creamy.

Attempts at Culture.

The fluid in the chest, the infarct in the lung and the clot in the heart were all sterile.

Histological Examination.

Examination of the thymus revealed normal differentiation into cortex and medulla, with the cortical cells less closely packed than is usual at the child's age. Eosinophile cells were present in the lumina of the vessels, but none were seen amongst the tissue cells.

The pleura was normal. The alveoli and bronchi were filled with œdema fluid, whilst scattered in small patches were areas with many eosinophile cells contained in the fluid medium, filling the alveoli. The interalveolar capillaries also contained many eosinophile cells.

The lung infarct was a wedge-shaped area, examination of which revealed extensive recent extravasation of red cells into the alveoli, distending them, whilst only a small degree of phagocytosis of hæmosiderin granules had occurred. At the base of this area was an artery of medium size, completely occluded by necrotic material. Eosinophile cells were scattered throughout this section.

The mural clot in the heart was composed of cell débris and interlacing fibrin strands containing red cells and eosinophile cells within its meshes, and at the left ventricular apex this became merged with the underlying necrotic cardiac muscle. Examination of the cardiac musculature revealed most extensive damage. Large areas of necrosis were present. In some of these no muscle tissue remained; the reticulum stood out strongly and was thickened in some parts (Figure II). In other areas the appearance of abscess formation was pronounced, though the predominating cell in these clusters was the mature eosinophile; there was only a very occasional neutrophile cells. Fibrosis was apparent around some of the necrotic patches, but was never very pronounced. The remainder of the musculature not affected by these changes showed fatty change and hyaline degeneration. Many vessels, their lumen occluded by necrotic material, were visible within and around the necrotic areas. Extensive search failed to reveal any organisms in the mural clot or in portions of the muscle densely infiltrated with cells. There was no evidence of past or recent rheumatic involvement.

In the liver there was a well-defined central necrosis, spreading out from the dilated central veins and accounting for about half of each lobule. Gradually this necrosis shaded into a fatty degeneration as the portal system was approached. In all areas the sinusoids were dilated and contained an occasional eosinophile cell within their lumina. The portal system was not infiltrated and there were no areas of leucopoiesis or erythropoiesis.

The capsule and trabeculæ of the spleen were normal. The sinuses were distended and filled with eosinophile cells, for the most part mature forms with multilobulated nuclei; but an occasional eosinophile myelocyte could be seen. The sinuses also contained numerous red cells and an occasional large phagocyte with granular cytoplasm. The Malpighian corpuscles were well defined and composed of small lymphocytes with an occasional eosinophile cell in relation to the blood vessels.

The splenic infarcts were numerous and wedge-shaped. They were surrounded by an area of congestion, followed by an area of liquefactive necrosis, whilst towards the centre, though cell outline was lost, many pyknotic nuclei and chromatin fragments remained. There was no evidence of early peripheral fibrosis. In one area there was a branching vessel with its lumen occluded by necrotic débris.

The kidneys showed slight damage, as was evident by the beginning hyaline droplet degeneration of the cells lining the convoluted tubules and by the early pyknotic changes in their nuclei. An occasional eosinophile cell was present in the glomerular tufts, and many eosinophile cells were present in the medullary vessels. There were no infarcts and no sclerosed glomeruli.

Examination of section from the hæmorrhagic area of the colon revealed hæmorrhage into and beneath the mucosa, with partial destruction of the membrane; but the muscular coats were intact.

The architecture of all the lymph glands was intact, and with slight variations in different regions they showed the same changes. There was a decrease in the size of the lymph follicles, which were composed of a well-defined rim of small lymphocytes surrounding Flemming's centres. The central arteriole was easily discerned, as it often contained an eosinophile cell. The sinuses were distended and œdematous, and contained many eosinophile cells and mononuclear phagocytes. Œdema was most pronounced in the mesenteric glands, whilst congestion was the oustanding feature in the paraaortics.

Examination of marrow from ribs and the sternum revealed a great preponderance of mature eosinophile cells over all other cells, with a much higher proportion of eosinophile myelocytes than were present elsewhere. Very few of the neutrophile series were seen. Mature red cells were present in small numbers; but no nucleated forms were seen in the counting of 1,000 cells.

The alimentary contents were examined for ova and parasites, but none were found.

The muscles contained no trichinella.

There was no evidence of hydatids or of Hodgkin's disease.

Discussion.

From a perusal of the above facts it is apparent that the morbid processes involved in this case, whilst not of long duration, had been active considerably longer than the history would seem to indicate. The progress of events seems to have been as follows: the bone marrow changes were the first to occur, and from these the other pathological changes occurred as cause and effect. Then, owing to some change, defect or stimulus, the bone marrow proceeded to produce a granular type of cell, which in normal conditions is present in the circulating blood not at all or in extremely small numbers—a cell, moreover, which would seem to have very little functional value as far as we know at present. Furthermore, this cell was produced and liberated in great numbers, not, it should be noted, at the expense of the normal granular leucocytes; the neutrophile cells were present in excess numbers also, but at the expense of the red cells, possibly owing to marrow overcrowding. The next event in this process can only be surmised, for there is no evidence from direct observation.

It will have been noticed that multiple hæmorrhages are not a feature of this case; one area was found in the colon, others were found beneath the pericardium, and all could have been effect, not cause. It would seem possible that what next occurred was a subendocardial hæmorrhage in the left ventricle, with subsequent damage to the nutrition of this part.

Here, then, are the necessary components—a damaged endothelium and a high leucocyte count—which would make for a rapid formation of clot as found in the ventricle; and so a clot was formed, which, as it became older, became more friable, and the detachment of small or large portions was a matter of time.

From here fragments were swept into the coronary and splenic arteries, producing the extensive cardiac damage and the multitudes of splenic infarcts which have been noted. As further cardiac damage occurred, so the functional capacity of the heart decreased, with slowing of the circulation and partial stagnation of blood; with this cardiac failure came the pulmonary infarct, and it is the explanation of the pleural effusion, the pulmonary œdema and the general congestive changes found in other organs. It also explains the histological changes in the liver, which are those of early congestion that in time progress to the "nutmeg" type of liver so commonly described, and also the changes in the kidney, which are those of nutritional deficiency in this case. It probably accounts for the distension of the sinuses in the spleen and the lymph glands.

This case has been classed as one of acute eosinophilic leuchæmia, not because it is certain that the condition is a leuchæmia, but really for want of a better appellation, and to bring it into line with the extremely few recorded cases in which a similar though not identical clinico-pathological syndrome has been described under this name. The blood count and histology make it quite apparent that this case is not typical of acute myeloid leuchæmia; or at least it does not show many of the features which our concept of this disease includes. The first and most striking difference is the maturity of the circulating cells; there was no greater number of immature cells than would occur in a simple leucocytosis of this order. It may be advisable to mention at this stage that the circulating cells are not normal eosinophile cells. They are extremely large cells, with considerable variation in the granules, many of which do not take the acid stains with normal intensity. Further, many of these cells show clear areas of cytoplasm with no granules, and the majority contain many small vacuoles. In short, the the cells look as though they were suffering a severe toxic degenerative change.

Histologically, if the condition was acute leuchæmia, one would expect to find invasion and infiltration of the organs by the type of cell involved, with subsequent destruction of tissue. This is generally obvious in the kidneys and liver; but as has been stated, in this case these features are entirely lacking. The cells are all within the vascular channels and are easily apparent because of the associated congestion. This applies also to the spleen and the lymph glands. Admittedly there are immature forms in the splenic sinuses, but of no greater order than would be expected from the count of the circulating cells. So if this is a case of leuchæmia, then in many ways the eosinophile cell does not progress as does its near relative, the neutrophile cell.

Rather undue stress may seem to have been placed on an academic point, the question of the presence or absence of leucosis, and for the following purpose: as soon as a label is attached there is a tendency to place that disease entity in a pigeon-hole and leave it there. There can be no doubt that classification is definitely harmful in that way; and so despite the label it is only right to keep an open mind. We are totally ignorant of the functions of the eosinophile cell and of the nature of the stimuli which cause its increased production in parasitic infections *et cetera*. I have endeavoured to exclude here the possibility of any infection by the common pathogens, by means of attempted culture made *ante mortem* and *post mortem*. The known parasitic diseases *et cetera* have been excluded; but it is by no means impossible that in this case some point has been overlooked which might have given the clue to the riddle of the eosinophile cell.

Summary.

A case is described in which a high eosinophile leucocyte count is associated with death from heart failure due to multiple infarctions. The possibility of leuchæmia or of hyperleucocytosis due to some unknown stimulus is discussed.

Acknowledgements.

I wish to thank Dr. Laurence Hughes for his kind permission to report this case, Dr. Frank Tidswell for advice and helpful criticism, Mr. Mitchell for the histological preparations and Mr. Sheridan for the photographs.

Reviews.

POISONS.

FOR years past it has been difficult to obtain copies of some of the older authoritative works on the detection of poisons. Those who are concerned with this subject will therefore welcome enthusiastically a 1940 addition to their none too extensive literature in "Poisons: Their Isolation and Identification", by Frank Bamford, B.Sc., late Director of the Medico-Legal Laboratory, Cairo.

[1] "Poisons: Their Isolation and Identification", by F. Bamford, B.Sc., with a foreword by S. Smith, M.D., F.R.C.P.; 1940. London: J. and A. Churchill Limited. Demy 8vo, pp. 352, with 21 illustrations. Price: 18s. net.

The work was produced near the end of a life devoted in large part to toxicological analysis. The author unfortunately passed away when the first galley proofs were being printed; but his book is a monument by which he will long be remembered.

The valuable introduction dealing with the organization and equipment of a laboratory for toxicological work bears testimony to the wide practical experience of the author and to his possession in the highest degree of that attitude of scientific exactness and caution so essential in forensic medicine.

The favourable impression created by the introduction is sustained, in fact heightened, as one delves deeper into the book. The chapter headings include: "Classification of Poisons", "Volatile Poisons", "Common Metallic Poisons", "Other Metals", "Corrosive Acids and Alkalis", "Non-Volatile Organic Poisons", "Non-Basic Organic Poisons", "The Isolation of Non-Volatile Poisons", "A Systematic Scheme for the Identification of the Alkaloids", "Systematic Testing for Non-Basic Poisons", "Miscellaneous Poisons", "Drugs of Addiction".

Illuminating comments made as a result of personal observation and experience lend great value to each section.

Professor Sydney Smith, of the Department of Forensic Medicine, University of Edinburgh, writes: "A perusal of this book shows it to be the product of a practical, highly skilled specialist in toxicological analysis, and it can be recommended with complete confidence to all those whose work entails such analysis." Such commendation will make all those concerned with the subject anxious to acquire the work, and its acquisition will prove well worth while.

THE SKELETON.

EVER since its first appearance over a quarter of a century ago Frazer's "Anatomy of the Human Skeleton"[1] has been regarded as an outstanding achievement among anatomical text-books. Its unique method of approach, excellent illustrations and accuracy have been a constant source of inspiration to anatomists. In all previous editions the author has retained the old British terminology, and since most British schools have long ago adopted the B.N.A. and all have since accepted that of the Birmingham revision of the B.N.A., the wider use of the book has probably been hampered. The adoption in this fourth edition of the B.R. terminology at once greatly increases the usefulness of the book in British schools and removes all obstacles to its use by the already harassed student.

In recent years there has been a tendency towards a simpler presentation of the facts of anatomy; authors have shown a tendency to place too much reliance on simple schematic figures and have drifted from an accurate presentation of anatomy as seen in actual anatomical specimens and in the living subject. Now that the more familiar terminology has been introduced into this text-book, it will no doubt do a lot to keep anatomy for the student from any tendency to degenerate into a mere "cram" for examination purposes, such as a too symbolic presentation would tend to make it. No doubt any method which makes the facts of anatomy easier to absorb is welcomed by students; but it is very refreshing to return to Frazer and to be brought into closer acquaintance with actual fact.

Nowadays first-class text-books of anatomy attempt a more scientific presentation based on developmental and comparative anatomy, but nowhere is this done to better advantage than in certain sections of Frazer's work on the human skeleton. While it would be generally accepted that medical students should not be expected to become expert embryologists and comparative anatomists, there is a lot to be said for making a wider use of these sciences to illuminate and to add interest to the subject.

Frazer's "Anatomy" preserves a balance between facts useful to the surgeon and those necessary for a truly scientific presentation based on a wider knowledge of biological sciences, and, in addition, stresses the relation of structure to function. After all, the practising surgeon is confronted with anatomy as seen in the living, and it is Frazer's aim to build up his subject to this purpose around specimens that are ready to hand to every medical student or practitioner. With a set of bones, a "Frazer", his own body always to hand, and an occasional return to the dissecting room, a practitioner or student of anatomy should be able to keep fresh in his memory many of the most important facts of anatomy.

In this new edition, besides the adoption of the new terminology, the text has been carefully revised and the index has been extended to almost twice its original length.

POPULATION, RACE AND EUGENICS.

"POPULATION, Race and Eugenics" is a small book of 206 pages, including the index, and it contains a great deal of very useful information. The title is not very attractive; it is rather clumsy. This is probably a little unfortunate, for the contents are valuable and present in a concise and condensed form an account of modern knowledge upon population problems.

The work is divided into two sections of five chapters each. The first section deals with positive eugenics and the second with restrictive eugenics. The first chapter gives a short account of eugenics, the second deals with the ætiology of the phenomena of differential fertility rates, and in the third the author makes constructive recommendations for action to remedy the differential marriage and birth rate. The author's views on the last-mentioned subject may be found by some people to be contentious; they are on that account none the less interesting. His recommendations may be summed up as government assistance of some kind. To go into this question as a whole would involve a discussion of the whole social system—a discussion that cannot be undertaken in this place. The author deals in a very able and complete manner with the theory of racial superiority that has emanated chiefly from German sources. He shows by anthropological data and scientific surveys of mixed groups in American colleges that the theories of Nordic superiority are without any scientific foundation and are merely camouflage for the aggressive components of character that are so prominent a feature of German mentality. Other men of the calibre of J. S. Huxley and M. Carr Saunders and Professor Hogben have also shown how false are the claims of Nordic superiority; but we cannot have at the present time too much of this trenchant criticism, and Dr. Siegel is to be congratulated upon his very excellent presentation. The last chapter deals with rational marriage.

The second section gives a clear and unbiased account of the social problems relating to feeble-mindedness, epilepsy and mental disorders. A considerable amount of space is given to statistics upon this problem and, contrary to the opinion generally met with among medical men as well as other citizens, the figures chosen from official sources go to show that mental disorders are not increasing, that feeble-mindedness is only very doubtfully increasing, and that both these types of people have a higher mortality rate, a lower marriage rate and lower birth rate than the ordinary population. The author finally deals with measures suggested to restrict and eliminate unsound types, and all suggested methods are examined impartially.

Dr. Siegel has written a very useful book, especially useful to medical men interested in social and economic problems, as all should be.

Notes on Books, Current Journals and New Appliances.

HYGIENE FOR NURSES.

THE fifth edition of "Hygiene for Nurses" has just been published.[2] The fourth edition was reviewed favourably in this journal several years ago. It is written by examiners to the General Nursing Council of Scotland, and the examination papers printed in the appendix show the standard demanded of Scottish nurses. Some of the material in this manual has a local application only, but it covers all that a nurse should know of the subject. The book is simply written and the subject matter well set out. We have no hesitation in recommending it as an eminently suitable text-book for nurses.

[1] "The Anatomy of the Human Skeleton", by J. E. Frazer, D.Sc., F.R.C.S.; Fourth Edition; 1940. London: J. and A. Churchill Limited. Demy 4to, pp. 308, with 219 illustrations, of which many are in colour. Price: 30s. net.

[1] "Population, Race and Eugenics", by M. Siegel, M.D.; 1939. Ontario: Published by the author. Crown 8vo, pp. 216. Price: $3.00 net.

[2] "Hygiene for Nurses", by J. Guy and G. J. I. Linklater; Fifth Edition; 1940. Edinburgh: E. and S. Livingstone. Crown 8vo, pp. 252, with illustrations. Price: 5s. net.

The Medical Journal of Australia

SATURDAY, AUGUST 17, 1940.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

THE RIGHT MAN IN THE RIGHT PLACE.

In the total war that is being waged by the British Commonwealth of Nations in the name of liberty and justice against the cruelty, the despotism and the grandiose ambitions of the German and Italian dictators, British determination, British doggedness and British courage are not sufficient. Every man and woman in the community may be fired with consuming zeal to serve; every man and woman, yes, and every child able to understand something of what the upheaval means, may be ready to do without the comforts of life and perhaps without many of the things that they have always looked on as needful; all who can work with brain, with body or with both, may be ready to spend themselves in working for the common good; possessions, goods or money, may be given to meet the needs of the realm or to fill its coffers; all this may be done, and even more; but if there is no proper organization, if control is haphazard or lax, the result will be muddle, a useless spending of energy and possibly failure. A few weeks ago, when the British Parliament at Westminster gave the Government plenary powers over the manpower, the wealth and all the resources of the nation, approval was unanimous. The people knew what a colossal task lay before them; they had seen the enemy pass from one foul deed to another, and it was certain that ere his lust for power was satisfied they would have to be crushed by him. Here was a time when strong steps had to be taken—there was to be no "muddling through". And so for a time Britain became of its own free will totalitarian. Australia has given to its Government powers almost as wide—no Australian can be conscripted for service overseas—and it has done this because it has the same aims as the Mother Country and because it believes that its Government is to be trusted. And Australia looks for efficiency within its borders, every man doing his duty where he is best suited and most needed. Dissipation of energy is unwise in any country at war, but doubly foolish in a large country like Australia, with its widely scattered centres and its small population.

This journal is concerned with the part that the medical profession is taking and will yet take in the Australian Imperial Force overseas, in the defence of our own shores, and in meeting the medical needs of the civil population. It is common knowledge, and has been stated more than once in these pages, that the number of medical practitioners who have offered for service overseas or who have stated that they will be available for service, is sufficient to satisfy all needs. The point on which the profession wishes to feel sure is that plans are made for any eventuality and that practitioners shall be disposed according to their ability and experience, that the plans shall cover every aspect of the problem and that there shall be no delay. In other words, the profession wishes to have the right man (or woman) in the right place and to have every place filled. Under the new powers acquired by the Commonwealth Government the Government has power to make regulations requiring medical practitioners to undertake any duties assigned to them within the confines of Australia. The data gathered in the *questionnaire* recently submitted to medical practitioners by the British Medical Association at the instance of the Federal Council should be of the greatest possible value. The Director-General of Medical Services, Major-General R. M. Downes, has explained to the profession how extensive are the duties of the Central Committee for the Coordination of Medical Services (THE MEDICAL JOURNAL OF AUSTRALIA, June 15, 1940, pages 841-844); it is to be hoped that this committee will use to the full the information obtained by the *questionnaire* when it is made available to it by the Federal Council. The Director-General has also stated that the State Coordination Committee in each State will be "expected to arrange for the continuance of medical service to the civilian community". The work done by the several coordination committees must of necessity be in large measure confidential; and in these circumstances the medical profession must be content to trust the Director-General of Medical Services, who will surely see to it that no obstruction, whether of circumstances or persons, is allowed to stand in the way of the proper functioning of the committees. When the committees have determined the allocation of personnel in the event of mobilization for home defence, the authorities might consider the advisability of informing every medical man and woman to what post or what kind of post he or she will be drafted. If mobilization ever becomes necessary, action will need to be undertaken quickly, and the medical arrangements would work smoothly if every practitioner had some idea beforehand of what was likely to be required of him.

Another aspect of the subject remains to be considered. It is not in the interests of efficiency to have the right man in the right place if he is restless and not content to do his duty in his appointed sphere. (This applies to women, of course, equally with men.) Many medical practitioners are restless and disappointed because they have not been sent overseas when they have volunteered. These persons forget that the medical units so far formed in the second Australian Imperial Force have all been staffed with suitable officers, and that everyone who volunteers cannot be sent. Apart from this, some offers no doubt have not been accepted because the applicants were not thought to be suitable, and others because their

places in Australia could not be filled. According to the journal of at least one Australian university, members of the teaching staff of its medical school have wanted to go abroad. For the authorities to accept an offer of service from such persons would be a lamentable blunder; indeed we may safely assert that offers of this kind would not be entertained for a moment. Again, practitioners in "one-man" towns have expressed their keen disappointment on being left where they were. To safeguard the interests of such towns is one of the functions of the several coordination committees. Again, women practitioners have quite naturally wished to serve the State and to take a man's share as they do in civil life. The days are long gone when women were supposed to stay at home to do the knitting and mind the babies (though everyone with a thought for the future of the race will wish that there were more babies to mind). At the same time no one will deny that war is a man's business; and men therefore should be used while they are available, even in the army medical services. We can imagine that in certain special branches of work, such as pathology and radiology, great difficulty may be experienced in finding enough men to fill the posts at all the overseas hospitals. In these circumstances women should be accepted; but we have yet to learn of any other reason for their being sent on active service overseas. Medical students too are often resentful at being compelled to finish their studies. No one can tell how long the war will last nor how many medical officers will be needed for the defence forces before it is over. To prejudice the future by allowing medical students to enlist will, we may be quite certain, not be permitted by the authorities. What has to be realized is that duty well done is the only true form of service. A man of military age who remains at home doing necessary work that he alone can do, is serving his country equally with the man who goes abroad. The same may be said of the man of military age who has been refused for service and of the man of more than military age, who, staying at home, help to safeguard the practice of an absent colleague. It is the readiness to undertake any duties within the capabilities of the individual that counts; and it is for the authorities to see that in the allotting of those duties the right man is put into the right place.

Current Comment.

A NEW TEST FOR THYREOTOXICOSIS.

A good deal of publicity has been given in the United States to the recent description by T. L. Althausen and his assistants at the University of California of a new biochemical test for thyreotoxicosis, capable of distinguishing this disease from others simulating it.[1] The acclaim with which their test was received on its first publication is a measure of the degree to which such a test has been needed. Most practitioners must have experienced the great difficulty which occasionally arises, of determining whether a young woman is suffering from thyreotoxicosis or from some form of anxiety neurosis or agitated depression. Most, indeed, remember having mistaken the one for the other. The patient is tremulous, her pulse is quick, her palm is moist, she is fidgety, easily reduced to tears, and does not know what has come over her; her basal metabolic rate is raised well above the normal. There is, however, no exophthalmos and her aspect is not quite in keeping with thyreotoxicosis. An analogous problem is sometimes presented by a middle-aged woman with cardiac irregularity or tachycardia, whose basal metabolic rate is raised and in whom thyreotoxicosis may be suspected. Much can be learned from observation of such patients in hospital. For instance, in thyreotoxicosis the pulse rate remains rapid during sleep; adrenaline may be injected to demonstrate the profound effect usually produced by this substance on the blood pressure in thyreotoxicosis; iodine administered in collaboration with the surgeon may exert a therapeutic effect which is diagnostic. But all these clinical methods may still leave the diagnosis in doubt.

The diagnostic test of Althausen and his collaborators is based upon their finding that experimental hyperthyreoidism in rats caused an increased absorption of sugars from the intestine and thus the apparent reduction of sugar "tolerance" found in this disease. The test consists of the administration by mouth to the fasting patient of 40 grammes of a sugar which can subsequently be identified in the blood, namely, galactose, and the estimation of this sugar in the venous blood 5, 30 and 60 minutes afterwards. The authors have shown by experiments on a large number of patients that the average maximal concentration of galactose in the blood of patients with thyreotoxicosis is three times greater than normal and that clinically the test is comparable in reliability with estimations of the basal metabolic rate. After thyreoidectomy the galactose tolerance becomes normal in almost all cases. It is pointed out that the test is more sensitive than the estimation of the basal metabolic rate for detecting slight hyperthyreoidism, and that its outcome is not influenced by overbreathing in anxiety states or cardiac dyspnœa.

Unfortunately the test is not so simple in practice as in principle. In order to determine the amount of galactose in the blood the glucose and other reducing substances have to be removed, and this is done by fermentation with yeast, from which also reducing substances have been removed by washing. In 130 persons suffering from hyperthyreoidism the amount of galactose in the blood reached a maximum averaging 0·068%, but it varied between 0·025% and 0·152% in different individuals. This lower value is exceeded during the test in a proportion of persons not suffering from hyperthyreoidism, and, moreover, one would have to allow for a certain margin of error unless the test were being made by one thoroughly accustomed to all the phases of the technique. Thus an inconclusive result of the test might be expected in an appreciable proportion of cases.

Shortly after the publication of the work of Althausen and his assistants there appeared the report of an independent study of galactose tolerance as a test of liver function by N. F. Maclagan, of Westminster Hospital.[1] Maclagan gives full practical details of a modified method of estimating galactose in the blood, for which increased accuracy is claimed, and perusal of it must impress on the reader the degree of technical skill and care required for the accurate performance of these tests. Maclagan states that either venous or capillary blood may be used, and advises that four samples be collected for analysis, 30, 60, 90 and 120 minutes respectively after administration of the galactose. He suggests the term "galactose index" for a figure derived from the sum of the values obtained; the average normal "galactose index" is 68 and the upper normal limit is about 160. Maclagan points out that in thyreotoxicosis the galactose index is abnormally high; but, unlike the American workers, who distinguish sharply between the true impairment of galactose tolerance caused by hepatic disease and an apparent impairment attributed to increased absorption of sugar from the intestine occurring in thyreotoxicosis and Paget's disease, Maclagan concludes that the test supports the view that liver damage is part of the pathology of thyreotoxicosis, and refers to

[1] *The American Journal of the Medical Sciences*, March, 1940.

[1] *The Quarterly Journal of Medicine*, April, 1940.

evidence in favour of this view adduced by morbid anatomists.

It is quite clear that the last word has not been said in explanation of the altered galactose metabolism in thyreotoxicosis, which has recently been demonstrated. The tests to demonstrate this altered metabolism have their limitations and complexities too; but none of these things appear to vitiate their practical value and importance, and doubtless the biochemical staffs of clinics and hospitals where diseases of the thyreoid gland are frequently encountered will find it worth while to gain experience in their accurate performance.

VITAMIN A DEFICIENCY IN DIABETES MELLITUS.

THE use of the biophotometer has revealed many interesting facts about vitamin *A* deficiency. J. G. Brazer and A. C. Curtis have studied a group of twenty young or middle-aged patients with *diabetes mellitus*, all of whom were found to have poor light adaptation.[1] Three of these patients were aware of night blindness, and nine showed cutaneous changes probably due to vitamin *A* deficiency. The authors were led to undertake this work by a study of the literature dealing with carotinæmia in patients with *diabetes mellitus*. The presence of increased amounts of carotene in the blood of patients with *diabetes mellitus* has long been recognized, both by the clinical observation of xanthosis and by the result of laboratory tests. On the other hand, certain observations suggest that a deficiency of vitamin *A* is associated with diabetes. Here is an apparent paradox, and the authors' study is an attempt to resolve it.

A control for their experiments was provided by the determination of biophotometric readings on twenty normal subjects. These were comparable with the normal values obtained by other observers. Having established the presence of poor light adaptation in the diabetics, the authors proceeded to give these patients large doses of carotene for a period of fourteen days. This failed to improve the biophotometer readings significantly, although it increased the already high blood carotene values. But the daily administration of 60,000 United States Pharmacopœia units of vitamin *A*, in the form of concentrated fish liver oils, caused the light adaptation of these patients to return to normal or nearly normal in periods ranging from three to twenty-one days.

The authors deduce from these experiments that the cause of poor light adaptation in patients with "juvenile" *diabetes mellitus* appears to be an inability to convert carotene to vitamin *A*. The moral seems to be that vitamin *A* preparations should be given regularly to all young or middle-aged diabetics, at any rate during the winter months, when natural foodstuffs are likely to be deficient in this vitamin.

[1] *Archives of Internal Medicine*, January, 1940.

British Medical Association News.

SCIENTIFIC.

A MEETING of the Section of Oto-Rhino-Laryngology of the New South Wales Branch of the British Medical Association was held on November 30, 1939, at Sydney Hospital, DR. E. MCA. STEEL, the Chairman, in the chair.

The Investigation and Diagnosis of Ethmoiditis.

DR. D. G. CARRUTHERS read a paper entitled "The Investigation and Diagnosis of Ethmoiditis" (see page 147).

The Histology of Nasal Polypi.

DR. A. D. GILLIES read a paper entitled "The Histology of Nasal Polypi" (see page 149).

The External Fronto-Ethmo-Sphenoid Approach.

DR. H. S. KIRKLAND read a paper entitled "The External Fronto-Ethmo-Sphenoid Approach" (see page 149).

The Operative Treatment of Ethmoiditis.

DR. B. B. BLOMFIELD read a paper entitled "The Operative Treatment of Ethmoiditis" (see page 150).

The Treatment of Ethmoid Suppuration and Polyposis after Operation.

DR. J. P. FINDLAY read a paper entitled "The Treatment of Ethmoid Suppuration and Polyposis after Operation" (see page 151).

DR. G. C. HALLIDAY commented upon Dr. Kirkland's statement that after the external ethmoid operation there had been some disappointment with the cosmetic effect from the incision. He explained Dr. Godsall's and his own procedure, and pointed out that a most satisfactory cosmetic appearance had followed when the incision was not carried below the level of the medial palpebra. Dr. Halliday had seen frequent use of skin grafts in Edinburgh, and these were unquestionably successful, even when placed over bare bone.

DR. E. P. BLASHKI thanked the speakers and took the opportunity of reminding those present that the roof of the ethmoid inclined in a backward and downward direction, so that care had to be used in the intranasal operation because the ethmoid roof was much lower at the back than in front. He considered that when an external ethmoid operation had been performed, the fronto-nasal duct had been destroyed, since it was a passage surrounded by ethmoid cells. He doubted the usefulness of implanting a skin graft on raw tissue, and said that in general surgery no one would use such a graft except on a granulating surface. Dr. Blashki further referred to the danger that might occur when patients had undergone an ethmoid operation and some time later had to be submitted to a further procedure; he had seen several instances in which a violent reaction and fatal meningitis had followed in such cases. He recommended the use of suction cleansing during after-care, and thought that the use of chemotherapy on modern lines would do much to lessen the risks of infection in this danger area.

DR. H. S. MARSH said that in his recent experience overseas he had seen quite a number of operators. Some used skin grafts and others did not. Each seemed to be satisfied that his own procedure was the best. One surgeon considered that skin grafts eventually produced large masses of cholesteatoma, which had to be removed at intervals. Referring to Dr. Blomfield's paper on the intranasal operation on the ethmoid, Dr. Marsh said that his operation was somewhat similar to Mosher's, but that Mosher removed the middle turbinate after he had exenterated the cells by working outside the middle turbinate. Dr. Marsh went on to say that the removal of all mucous membrane was desirable in chronic cases; but he had noted in acute cases that a *restitutio ad integrum* occurred when the cells were merely opened and drained.

DR. H. S. KIRKLAND explained that it was important to avoid removal of the frontal process of the maxilla, so that there remained at least some support for the fronto-nasal duct. He thought that with improvement in technique it would be possible completely to eradicate nasal polypi, and pointed out that in his opinion the recurrence of polypi should be regarded as a confession of failure to perform a sufficiently extensive removal of affected tissue.

DR. D. G. CARRUTHERS said that in his opinion, if the same attention were to be applied to infiltration for local anæsthesia and for the production of ischæmia in the intranasal operations as was commonly done when the surgeon proposed to perform the external operation, then a great deal more could be done through the nose itself than was the case when the surgeon attempted to operate merely with the degree of anæsthesia and ischæmia that could be produced with a packing alone. Dr. Carruthers also doubted the optimistic view that even when an external operation was performed the operator could feel confident that polypi would not recur. He believed that the evidence pointed to polypi being due to a specific infection, and he thought that it was impossible for the surgeon to be certain that he could eradicate this. He had seen, even after external operations, the regrowth of polypi as little buds arising especially from the lower margin of the ethmoid labyrinth where that recess opened into the nose just above the antrum.

DR. E. MCA. STEEL, from the chair, thanked the speakers and pointed out the value of "Neo-Synephrin" in the after-treatment; it not only opened up access through the swollen tissues, but it was also followed by less reactionary swelling than adrenaline.

Abstracts from Medical Literature.

BACTERIOLOGY AND IMMUNOLOGY.

The Laboratory Diagnosis of Diphtheria.

K. E. COOPER *et alii* (*The Lancet*, May 11, 1940) have made comparisons of the value of various media in the laboratory diagnosis of diphtheria. Five different laboratories cooperated in the investigation of the results obtained on Löffler's inspissated serum slopes, and those obtained by the use of some form of medium containing blood and a salt of telluric acid. In Leeds a series of 7,429 cultures were compared, and a total of 19·8% was positive. Amongst this there were 255 cultures in which a discrepancy was found, and while the Löffler medium gave an earlier result in 23·11% of cases, the tellurite gave a far higher proportion of positive results. In the cases that were in doubt a follow-up was made, and it was found that Löffler's medium missed a far higher number of serious and severe cases. In Bristol, an area where the intermediate form of the bacillus is much more prevalent, 12% of positives were obtained only on tellurite medium, and 4% only on Löffler. The workers noted the difficulties of diagnosing the barred form of bacillus on the Löffler medium. An attempt was also made to evaluate the different forms of tellurite medium, the Clauberg, Anderson, Glass, Neill, and Gundel Tietz formulæ being used. No clear-cut information could be gained, and the authors think that differences in meat extract, as well as those created by heat sterilization as opposed to filtration sterilization, may easily account for the advantages claimed in different laboratories for their particular variety. The final conclusion, however, is that cultures should be made as far as possible in routine work on both media, the authors stating that those bacteriologists who depend entirely on Löffler's medium are doing second-rate work in the diagnosis of diphtheria.

Infection of White Mice with Three Types of Diphtheria.

K. ZINNEMANN (*The Journal of Pathology and Bacteriology*, March, 1940) devised experiments to produce general infection of mice by *Corynebacterium diphtheriæ*, and to see whether any difference in pathogenicity was shown by the three types. Young mice were infected in groups of three, and were given one cubic centimetre of a twenty-four hour culture by either the intraperitoneal or the intravenous route. Thirty-six strains were used, four of which were washed to eliminate any toxin formed in the medium; 10 were *gravis*, 10 *mitis* and 16 intermediate strains. The mice were watched for four weeks, if death had not occurred before. The general results showed that the infection produced was 93·3% fatal with *mitis* strains, 68·6% fatal with *gravis* strains, and 46·8% with intermediate strains. In animals surviving there was variability of symptoms from slight to extensive; paralysis was of frequent occurrence. At post-mortem examination intensive engorgement of the suprarenals was a common finding, and swelling of lymph glands and hæmorrhages in the abdominal wall were also of frequent occurrence. Cultures were made from the abdominal and thoracic organs and brain under aseptic precautions. The organisms were recovered from some organ in 98·7% of cases, kidney, liver and spleen being the commonest, and the brain the rarest, and that only after intravenous injections. Blood cultures during life were made from the tail blood of mice which had been given intraperitoneal injections, and in 46% the same type of organism as that injected was recovered from the blood stream forty-eight hours later. The author thinks that order of pathogenicity for mice was *mitis*, *gravis*, *intermedius*, the last mentioned being seldom recovered from the internal organs. He suggests also that some of the anomalous results of work with *Corynebacterium diphtheriæ* might have been due to the use of strains less virulent for mice, a higher minimum lethal dose thus being required.

Agglutinins Following Appendicitis.

ERWIN NETER AND ELMER MILCH (*The Journal of Infectious Diseases*, March-April, 1940) undertook a study of the development of agglutinins for aerobic Gram-negative bacilli in patients with diffuse peritonitis or abscess formation following appendicitis. Eleven patients with general peritonitis and three with abscess were followed for periods up to thirty-one days after operation. The organisms used as antigens were those recovered from the pus from the individual patients; and serum was obtained from them at intervals and set up on the day of withdrawal in serial dilutions against suspensions of the organism at 37° C. and 55° C. and read after eighteen hours. Only one of the patients with peritonitis developed serum agglutinins against the homologous organism, the titre being 1 to 320 on the thirty-first day. In two cases with abscess, serum agglutinins of a titre of 1 to 250 were found. The authors discuss the absence of circulating agglutinins in regard to the duration of infection; they noted that in one case in which antibodies were found early, drainage of the abdominal cavity had been carried out; but they also remark that in three other cases in which drainage was used, there was no antibody formation. They hold that their results indicate the need for direct antibacterial therapy, either by means of antibacterial immune serum or by chemotherapeutic substances such as sulphanilamide.

The Reaction Time in Cutaneous Tuberculosis Allergy.

G. DADDI AND C. PANÀ (*Annali dell'Istituto "Carlo Forlanini"*, November-December, 1939) administered intracutaneous injections of a tuberculin protein derivative to 163 persons suffering from tuberculosis, and observed the time taken for the allergic reaction to begin to appear. This time varied from four to forty-eight hours, but it appeared to bear no relation either to the kind or stage of the disease or to the degree of sensitiveness of the individual to the protein.

The Nutrition of Hæmolytic Streptococci.

H. MCILWAIN (*The British Journal of Experimental Pathology*, February, 1940) has continued his work on the nutrition of the hæmolytic streptococcus, its growth in a chemically defined medium, and its need of vitamin B_6. He endeavoured to replace the constituents of meat extract broth of common use by a peptone basis, with the addition of various groups of amino acids and essential growth factors. Yeast extracts were numbered amongst the latter, and also the pantothenic acid extracted from liver concentrates. A basic mixture was found and tested further by the addition of certain of these substances obtained naturally or synthetically prepared in a more purified form, and their withdrawal from the mixture one by one could give a clue as to their action and indispensability. The author comments on the high proportion of sulphur-containing substances numbered amongst those without which maximal growth cannot be obtained. The essential growth factors are best obtained from natural sources, and can be replaced only by compounds of closely related chemical structure; their effect is equally shown in presence of excess of other nutrient factors. The work produced a medium containing forty known compounds which gave optimal growth of the test organism as compared with the routine media, but the author found that the naturally occurring forms of some essential growth factors could more effectively replace the synthetic substances.

HYGIENE.

Tuberculous Infection and Mortality in the Children of Tuberculous Households.

MIRIAM BRAILEY (*American Journal of Hygiene*, January, 1940) states that for infants under two years of age attending the out-patient clinic for childhood tuberculosis at the Johns Hopkins Hospital a family record is kept. With the help of medical social workers, a complete roster of all members of the family alive or dead, including regular lodgers, is available, and full medical records and control are maintained. During the period of nine years, 1928 to 1937, in households with an adult suffering from pulmonary tuberculosis, individuals entering under fifteen years of age were followed up, control ending at twenty years of age. Of 285 families the infected adult was first noted in 71%, an infected child (not necessarily ill) in 29%. In 138 families of whites the child was first noted in 22%, in 94 coloured groups in 36%. Further, the coloured children showed extensive lesions more frequently. After elimination of these "index cases" as representing persons more likely to die, the unselected remainder of the household were studied as to the probability of infection. One thousand three hundred and eighty-three entered these households before fifteen years of age; 617 were white and 766 coloured, but in these indigent families similar infection reactions were found. When the adult was "sputum positive" the percentage of positive findings in children rose from 29 among infants under one year to 64 among children one year old, and to 84 in the ten to fourteen year old group, or 77 in all children. When the adult was thought "sputum negative" 45% reacted to one milligramme or less of old tuberculin. When the duration of contact was calculated from the onset of symptoms in the adult, children exposed to a "sputum positive" patient for less than a month reacted in 37% of cases, those exposed for one to three months reacted in 60% of cases, those exposed for three to six months in 63%, for six to twelve months in 76%, and those exposed for more than one year in 85%. In the supposedly "sputum negative" cases 21% reacted after periods of one to twelve months, 56% after periods of over one year. The risk of infection among whites under five in contact

with a "sputum positive" person is eighteen times greater and with "sputum positive" persons is six times greater than the risk of infection among white children of the same economic class in Baltimore. The infants under one year of age showed the highest mortality and case fatality; after fifteen years of age the risk again rose sharply. Among coloured infants, though the infection rate was similar, the mortality was four to five times greater than among the white, and was strikingly different at every age. After known exposure from birth to twenty years the risk of dying, compared with the ordinary figure, increased in whites sixteen times and in the coloured eight times, the actual figures being 8·4% for whites and 25% for coloured persons. A full statistical treatment is given in the paper.

Tuberculosis Infection in Medical Students in Sydney.

D. ANDERSON (*Sydney University Medical Journal*, June, 1940) has applied the intracutaneous tuberculin test at the University of Sydney to 617 students, of whom 425 were medical students. He found that the proportion of medical students who sustain tuberculosis infection during their course of study is no greater than the proportion of students in other faculties. The proportion is much less than that found in the medical schools of most other universities where investigations have been made, in most of which nearly all the students become infected; but the proportion is almost identical with the proportion infected in the University of Wisconsin. The proportions infected were compared for each quinquennial age group of the 425 medical students, 180 other students and 789 young men in the population at large. In those groups which were large enough to be truly comparable there was no significant difference in the incidence of tuberculosis infection.

A Tuberculosis Survey in Nova Scotia.

J. S. ROBERTSON (*Canadian Public Health Journal*, April, 1940) reports that he made a survey of pupils and teachers at the Bridgetown School, Nova Scotia. He used the tuberculin patch test (Lederle). A strip of adhesive tape, on which are placed two small squares impregnated by tuberculin, is applied to the arm. The results are read four days later and are in close agreement with those obtained by the Mantoux test. Positive reactors were examined by X rays. Of the children 90% (233) were tested, and 13·7% reacted and X-ray examination revealed evidence of infection. The 13·4% in the primary school and the 14·2% in the high school indicate little or no increase with age—four out of 25 contacts were "positive". The low figures suggest effective control of animals and, to some extent, human beings.

Upper Respiratory Infections.

FREDERICK SARGENT (*American Journal of Public Health*, May, 1940) reports that at a preparatory school of 2,000 pupils, 6,800 colds were recorded over a four-year period. A constant feature is the weekly curve with a drop on Wednesdays and a greater drop at the week-ends—"the reluctance curve" related to the mid-week half-holiday and the contests and "movies" on Saturdays and free time on Sundays. The change in habits as to meals, hours of sleep and contacts indoors is also thought to affect the curve. Week-ends out of town had little influence. In autumn and winter the Monday and Tuesday rise is greater than in spring. In the unseasonably cold spring of 1939 the figures, usually lower at that season, approached the high figures occurring in winter and autumn. While the peaks and troughs do not appear in the same months, seasonal periods of sickness are shown in the figures, winter having approximately twice as many colds as autumn and spring.

The Problem of the Gonococcus Carrier.

CHARLES M. CARPENTER AND ROBERT S. WESTPHAL (*American Journal of Public Health*, May, 1940) report that at the State prison of Attica, New York, with a population of about 2,200, they made an intensive examination for gonococcus carriers. Of 937 whites, 35% admitted previous gonorrhœal infection, and of 124 negroes, 50%. Eleven of the whites were carriers. In nine the urinary sediment was positive. Cultures were more effective than smears, but both are useful. *Neisseria pharyngis sicca* and *Neisseria catarrhalis* were found in two of the carriers and 13 other men. No anatomical or clinical findings explained the carrier state. The longest period was seven years and two months. Seven of the eleven persisted as carriers in spite of intensive treatment, including the use of sulphapyridine.

Tuberculosis Among Swedish Doctors.

G. BIÖRCK (*Svenska Läkartidningen*, March 8, 1940) has published a study of Swedish doctors examined for army medical service. It was found that 8·9% of all the male doctors were unfit for military service on account of tuberculosis.

Schistosomiasis in Irrigated Mountain Valleys of Venezuela.

J. ALLEN SCOTT (*American Journal of Hygiene*, January, 1940) states that for some years past the problem of schistosomiasis in an endemic area near Caracas, Venezuela, has been studied. He reviews the present position. A double method was used in the examination of stools for eggs: Stoll's technique together with the use of washing-out flasks with "negative" stools into conical sedimentation jars. Each method misses cases found by the other; together they are reliable. Both Cercariæ and snails were also examined. In Venezuela, *Schistosoma mansoni* is transmitted by two snails, *Australorbis glabratus* and *Australorbis olivaceus*. The valley of the river widens out at Caracas and grows sugar cane; the land is irrigated by canals in which the snails chiefly breed. About 70% of the rural population is infected, 80% of males and 60% of females. Of males between ten and sixty years of age, 90% are infected. In an outlying suburb about two-thirds of both sexes are infected. The canal water is used both for washing and drinking, and is even preferred to a safe piped supply, while latrines or defæcation areas near dwellings readily pollute the canals, quite apart from scattered pollution in the fields. In a hill valley above the irrigated area neither snails nor infected persons were found. Comparison of egg counts suggests that severe infestations are at least as frequent (30% of infected persons passed 600 eggs per cubic centimetre) as in Egypt. The writer recommends reduction of snail breeding by rebuilding of drains and spillways with concrete to permit of proper drying out at intervals of secondary canals. The use of other sources of domestic water would reduce human contact, while in special spots adequate rural sanitation would prevent pollution; the canals could be placed underground. Cooperation is essential and inspection should be permanent.

Dust Control in Rock Drilling.

LEONARD GREENBURG, T. F. HATCH, W. J. BURKE AND WILLIAM B. HARRIS (*American Journal of Public Health*, May, 1940) write that in the construction of the Delaware aqueduct, New York, two standards of permissible dust concentration were used: one for drilling in high silica rocks (more than 10%), class one, of 10 million dust particles per cubic foot, and the other for rocks with less than 10% free silica content, of 100 million dust particles per cubic foot. The rocks in New York readily fall into these two classes, so that a sliding scale was not appropriate. "Collaring" holes without turning on the water produced the maximum amount of dust. Automatic water valves are now required on drills. Three methods of ventilation proved useful: direct blowing from a vent pipe not less than 100 feet from the face, the exhaustion of air directly across the face with an auxiliary blower discharging across the face, the exhaustion of air from the face and its recirculation after it had been passed through an air cleaning apparatus. Here a rotoclone acts as an exhaust fan and precipitates water droplets and some of the dust. Blasting produces enormous concentrations and continuous exhaust ventilation is then employed.

Quick Freezing and the Nutritive Value of Foods.

M. S. ROSE (*The Journal of the American Medical Association*, April 6, 1940) publishes a report on the effect of quick freezing on the nutritive value of foods. Quick freezing is a mode of food preservation which affords the consumer fresh material, free from inedible waste and held in cold storage until delivery. Good quality, freshness, sanitary care, subjection to low temperatures as speedily as possible, a maintenance at −17·8° C. or 0° F, or at a lower level while in storage, in an airtight, waterproof package, and maintenance in a frozen condition until time of using are essential conditions for the production of safe foods of the highest possible nutritive value. The number of microorganisms in food is greatly reduced by quick freezing. There is little danger from foods frozen and held in storage at temperatures below 32° F., but when thawing occurs the organisms increase rapidly; hence frosted foods should be cooked without thawing or very soon afterwards. The refreezing of products once defrosted is not safe. Vitamin *A* values in foods are conserved if conditions which should prevail in the quick freezing of foods are observed. Vitamin B_1 is not affected by the freezing *per se*, but considerable loss may occur in the blanching of vegetables. Little, if any, loss of vitamin *G* was observed by the author in quickly frozen vegetables. Vitamin *C* in fruits is conserved by quick freezing and storage. The vitamin *C* value of quickly frozen vegetables depends on many factors that are enumerated by the author. Quick freezing must be distinguished from slow freezing; the author describes the effects of each of these processes and gives details of the various methods of quick freezing.

Special Articles on Psychiatry in General Practice.

(Contributed by request.)

VII.

CYCLIC STATES (MANIC-DEPRESSIVE PSYCHOSIS).

MANIA and melancholia were the pristine parents of psychiatry; and the verbal progeny of their mating sent confusion through centuries of medical thinking until Emil Kraepelin effected a brilliant dialysis of the manic-depressive from the schizophrenic psychoses. Though Kraepelin was the first to grasp the quiddity of the connexion between mania and melancholia, clues had already been dropped by his predecessors, Falret and Baillarger. Morgagni in the eighteenth century and Willis a hundred years earlier had stumbled on the relationship of these states of mind without realizing the implication of their affinity; and Shakespeare himself must be numbered among the psychiatrists: "If sad and merry madness equal be."

The emphasis which modern psychiatry places upon the fundamental connexion between manic and melancholic states is based on characteristics common to the entire group of the so-called affective psychoses. The chief of such features are the comparative benignity of the disorders, their cyclic, recurring or alternating tendency, the absence of any marked mental deterioration after the attacks, the accompanying emotional undulations, and the frequently innate constitutional predisposition with characteristic bodily habitus. No pathological change has been found to account for this type of disorder, but psychogenic factors have an undoubted ætiological significance. Hereditary predisposition seems more strongly marked in the manic-depressive reactions than in most other mental disorders. Females display a greater susceptibility than males. Endocrine imbalance may be detected in many cases although no direct link has been established between glandular disorders and the affective psychoses. While from the psychological angle mania represents a "casting-off of the yoke of the super-ego" and depression a rationalization of the sense of guilt originating from unresolved unconscious conflicts, the actual cause of the disorder appears to lie hidden in the play of psycho-biological forces at present imperfectly understood.

In the manic-depressive psychoses the tendency to recover appears to be as strong as the liability to relapse, and the characteristic course of such an illness is represented by periods of elation and depression separated by more or less lengthy intervals of normal health. It is well known, however, that many persons may go through life with but a single attack of mania or melancholia and be as well after such a breakdown as before it. On the other hand, recovery may never be achieved, the patient remaining in a state of chronic mania or depression with mental deterioration supervening after many years. Indeed, there is no constant sequence in this type of mental reaction, and little upon which to base a forecast of the ultimate fate of the person in whom such a reaction develops.

Description.

Mania.

Mania in the popular mind is synonymous with raving madness; in the limited psychiatric sense it denotes a heightened emotional reaction. It is encountered in varying degrees, which range from simple excitement to acute delirious frenzy. The cardinal symptoms of the manic reaction are elation of mood, increased pressure of activity and rapid association of ideas. The manic patient enjoys euphoric delights and revels in a sense of well-being and verbal intoxication. The mind seethes and bubbles over with plans never put into practice; talk becomes interminable; the high spirits become playful; repressions are loosened and bursts of bawdy song may alternate with specious eloquence and roguish wit. Ideas of grandeur mingle with expressions of personal prowess. Activity is incessant; deeds and exploits half completed follow each other with bewildering rapidity and shameless incongruity. Hilarity gives place to rage when actions are thwarted; but the mind so morbidly accelerated is easily distracted. Perception is unusually keen and orientation suffers no eclipse. Though delusions of a wish-fulfilling nature may appear in grandiose or paranoid disguise, hallucinations seldom obtrude in the variegated symptomatology of the manic reaction.

Melancholia.

When from the full meridian of manic exaltation the patient falls into melancholy, the lights of the world are darkened and vain deluding joys give place to withering self-accusations and misery is enthroned upon the mind. The stream of thought which flowed so gaily is choked up with the snags and weeds of remorse. Initiative is paralysed and ideation becomes bankrupt. All activity is impeded and the patient sits bowed down in miserable preoccupation. There is, to the melancholic, nothing good under the sun: glad tidings serve only to increase the mental distress as jocularity intensifies the despair. Social contacts are severed and all outside interests are discarded. Beauty and ugliness have no meaning and everything is a burden to the melancholic. Food and drink are distasteful and death alone is desirable. There are, of course, gradations in the severity of the depressive reaction and several types of melancholic response. Agitation may accompany depression and cause great restlessness from a sense of profound iniquity or impending disaster. Melancholic stupor, the most severe reaction, represents a final renunciation and symbolic death. Melancholic patients are deaf to reason, and insight into the nature of the illness is usually lost. Hallucinations, which are not uncommon, lead to erroneous judgements, and delusions of unworthiness, sin and self-accusation are the rationalization of the patient's feelings of wretchedness. The sense of guilt which invariably plagues the melancholic comes more from repressed wishes than from any overt misdemeanours.

Circular and Mixed Reactions.

Though mania and melancholia may occur as isolated episodes, there is sometimes found a circular form of reaction in which the emotional undulations follow in more or less regular sequence, the manic phase leading directly into the depressive phase or *vice versa*.

The various positive and negative symptoms displayed by manic-depressive patients are found in abnormal combinations in certain patients and constitute the mixed types of reaction elaborated by Kraepelin. Thus pressure of activity may be combined with depression; and exaltation may be seen in association with retardation. Other mutations are possible, but nothing is gained by a slavish adherence to artificial nosological subdivisions beyond the realization that atypical reaction patterns may be encountered within the manic-depressive terrain.

Involutional Melancholia.

Though it is intimately related clinically to the manic-depressive psychoses, there are many reasons for regarding so-called involutional melancholia as a separate clinical entity. Essentially a reaction to emotional stress, involutional melancholia develops typically at an epoch when the endocrine and reproductive glands are subject to diminished activity, when definite somatic changes are taking place and life's forces are commencing to wane. Those who are subject to these depressive attacks are by constitution unable to make satisfactory adjustments to the changing situations. They are of a set and inelastic make-up, rigid in outlook, lacking in humour, finicky and over-conscientious in their actions and devoid of outside interests. In the lengthening shadows of life's afternoon earlier frustrations and ungratified ambitions are reawakened in the mind, and lost opportunities and minor mistakes are thrown into vivid relief by the sense of life's brevity and the individual's insignificance, and take on a pathological appearance in the form of delusions of unworthiness and self-accusation.

However trivial the precipitating cause, the patient destined for involutional melancholia commences to worry and harnesses himself to the unproductive labour of making molehills into mountains. With his woes he becomes preoccupied and anxious. His countenance becomes leaden-eyed and haggard. Anorexia and constipation add to his discomfort by day and the expanding spectre of guilt haunts the lagging hours of the night, until

> No sleep can fasten on his watchful eyes
> Nor quiet enter his distempered thoughts.

Depression comes down like the darkness of an arctic night; the world seems a menace and consolation a mockery. With unpardonable sins upon his conscience he sees himself as a loathsome and abominable creature beyond the benison of forgiveness—his past made up of misdeeds and follies, his future of infinite despair. So he calls upon his God in stereotyped lamentation and feels, like Cain, that his punishment is greater than he can bear.

Such depression may crystallize into stupor or agitation may develop to the point of frenzy. Mutilation may accompany anxiety and negativism arise in those of schizoid make-up. Nihilistic ideas are frequently encountered and fantastic visceral delusions may blot out the original depressive thoughts. In the abject misery of such an illness, where despair seems to have shut out the last flickering ray of hope, many patients are led to suicide as the only solution; albeit nearly 50% of the patients who succumb

to involutional melancholia recover and, making the necessary mental adjustments, fall into line again with their fellows and bear their arms bravely to the appointed end.

Diagnosis.

Emotional oscillations may be observed in almost any psychosis. Exaltation may be the most prominent feature in general paresis; and so closely may this type of illness in its earlier stages mimic the manic phase of a true manic-depressive psychosis that it will be necessary to resort to neurological and serological investigations to establish the correct diagnosis. Paranoid symptoms frequently colour the clinical picture of psychotic states; and either in the form of exaltation or as persecutory ideas may complicate the diagnosis of mania. But true paranoics show a steadier psychotic development with more systematized delusional formation evolved from a typical background of introversion, moodiness and morbid suspicion.

Depressive states may present a train of early symptoms which resemble those of neurasthenia. The vagueness of the initial symptoms coupled with feelings of apprehension and undue fatigability or hypochondriacal visceral sensations are common to both conditions; but in the melancholic there is more inhibition of thought and action and less desire to discuss the illness with the physician than is shown by the typical neurasthenic, who is generally over-solicitous about all matters relating to health. Hope springs eternal in the neurasthenic. It is otherwise with the melancholic. Historical evidence of prepsychotic affective episodes may clinch a doubtful diagnosis in favour of melancholia.

Although the manic-depressive and schizophrenic psychoses are regarded as separate clinical entities, there is often considerable overlapping in their symptomatology, and this, in many cases, makes the differential diagnosis difficult and uncertain. Catatonic and manic excitement may present a very awkward problem in differentiation; so, too, may the melancholic and catatonic stupors. Recourse to the prepsychotic history with a view to establishing a cyclothymic or schizoid personality make-up is often the surest way to settle a diagnostic doubt. In the efflorescence of schizophrenic symptoms there is often a grotesqueness and incoherence in speech and manner quite unlike the symptoms which result from the accelerated or retarded mental activities of the manic-depressive, and the greater the mental dissociation displayed, the more likely is the psychosis to belong to the schizophrenic group.

Careful attention to the mode of onset of the psychosis brings its own reward in diagnosis, which will generally be an easy matter. But one must never lose sight of the fact that there are many known instances of typical schizophrenic psychoses which commenced with episodic disturbances of mood clinically indistinguishable from attacks of mania or depression. Dogmatism is, therefore, doubly dangerous when one considers the diagnosis and outcome of those mental states which occur in young people with mood changes under the mask of benignity.

Course and Prognosis.

As already indicated, a favourable percentage of those who develop manic-depressive states recover—some permanently and some temporarily. In uncomplicated cases spontaneous recovery frequently occurs with the lapse of time. The average length of the illness is from six to twenty-four months; but no one is able to foretell the length of individual attacks or whether such attacks will remain isolated or be followed by further attacks in later life. It is generally held that each successive attack confers a greater predisposition to relapse. Though mental deterioration may not be feared, the greatest danger to which the sufferer is exposed is the development of alternating states, for, in such conditions, the periodicity of the attacks is generally permanent.

In general it may be stated that the earlier in life the patient develops a manic-depressive attack, the worse is the prognosis. Hereditary and constitutional factors have an important prognostic bearing on the affective psychoses. Prognosis is naturally more favourable for an attack in which exogenous factors predominate over endogenous causes, and will be still more favourable in patients who formerly have evinced broad and healthy interests and have been well adjusted to their surroundings.

Treatment.

The treatment of the manic-depressive psychoses is still unashamedly symptomatic and empirical. So long as most manic-depressive patients can be kept alive, a large percentage will recover in spite of treatment. Apart from safeguarding the depressed patients from the risks of suicide, treatment broadly consists of giving adequate nourishment and adequate rest; and this is by no means as easy as it sounds. The continuous bath and the feeding tube are the psychiatrist's chief therapeutic implements in dealing with manic-depressive patients; and the judicious use of sedatives presents an individual problem in practically every case. Ancillary treatment may be found in the use of endocrine preparations, in exercise, in ultra-violet light, in the gymnasium or in music. Organized occupational therapy is of value in the early and late stages of the illness, and the psychiatric text-books are not lacking in ingenious suggestions nor the journals in reports of extravagant claims for the value of this or that new nostrum.

Of late years two methods of treatment have appeared valuable in shortening very considerably the duration of the manic-depressive attacks. The first of these was prolonged narcosis, which, although introduced twenty years ago, is still very largely experimental. Nearly every psychiatrist who has given the method extensive trial has altered the technique or added some modification; yet even the most conservative admit its value in the treatment of affective disorders. The latest method is that of artificially induced convulsions. This pharmacological shock therapy, introduced by Meduna for schizophrenic cases, has produced some astounding recoveries among manic-depressive patients, particularly in those who suffered from involutional melancholia.

It is needless to emphasize the experimental nature of this shock therapy. That it effects remissions in a few weeks in patients who would otherwise have had to remain in hospital for many months there is no doubt; but whether it has any effect in preventing subsequent attacks remains to be determined.

One of the perplexing questions in treatment is where the patient shall be nursed. Many of the more mildly affected patients could be nursed at home were it not for the detrimental effect of well-meaning but interfering relatives. On account of the lack of safeguards against suicide, the average hospital is scarcely suitable for treatment of acute cases. Some patients must inevitably be sent to mental hospitals. Definite rules for the disposal and nursing of patients cannot be laid down. The merits of each case must be appraised individually. The liability to suicide is an ever-present danger. It is less in proportion to the extent to which it may be anticipated. It is greatest when the treatment prescribed is the inevitable sea voyage.

R. S. ELLERY, M.D. (Melbourne),
Honorary Psychiatrist to the Alfred Hospital; Consulting Alienist to the Women's Hospital, Melbourne.

Correspondence.

THE JOURNAL'S NEW STYLE.

SIR: I have just received the August 3 number of your journal and was very disturbed when I read that it was affected by the Newsprint Rationing Regulations introduced by the Commonwealth Government.

Surely if any service in the community is of vital importance in war, it is the one which your publication performs. When one considers the value of the service rendered to the community by your journal and then examines the volume of our daily newspapers, one cannot help feeling sick at heart, more especially when one further examines the few sheets to which England's great newspapers have been reduced, while *The British Medical Journal* has been maintained at almost its normal level.

It may be argued that your journal also accepts advertisements, but on perusal I find that probably 90% of these are for medical purposes, often of reasonable importance. If it be demanded that your advertising space be limited, then, at least, the Government, by subsidy or other means, should ensure the continuance of your purely medical publications, which are of so great a value to the community, whether on the civil or military side. An actual examination of the contents of the above number revealed very little, if any, redundant matter.

It is even more important now, when overseas journals are fewer and arrive irregularly, that THE MEDICAL JOURNAL OF AUSTRALIA should be the last to be restricted.

Yours, etc.,

A. N. BURKITT,
Professor of Anatomy,
The University of Sydney.

August 2, 1940.

Obituary.

SAMUEL HALDANE HEALD.

WE regret to announce the death of Dr. Samuel Haldane Heald, which occurred on August 5, 1940, at Camberwell, Victoria.

Naval, Military and Air Force.

APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 147, of August 1, 1940.

AUSTRALIAN MILITARY FORCES.

NORTHERN COMMAND.

First Military District.

Australian Army Medical Corps.

To be Major (temporarily)—Captain J. F. Dunkley, 10th April, 1940.

EASTERN COMMAND.

Second Military District.

Australian Army Medical Corps.

To be Temporary Lieutenant-Colonel—Major N. H. Meacle, 1st May, 1940. Major S. C. M. Hiatt is appointed to command the 14th Field Ambulance, and is granted the rank of temporary Lieutenant-Colonel, 1st May, 1940, *vice* temporary Lieutenant-Colonel A. W. Morrow, seconded to the A.I.F.

SOUTHERN COMMAND.

Third Military District.

Fourth Division: Staff.

Lieutenant-Colonel (Temporary Colonel) A. P. Derham, M.C., Australian Army Medical Corps, relinquishes the appointment of Assistant Director of Medical Services, 16th April, 1940.

University Intelligence.

THE UNIVERSITY OF SYDNEY.

A MEETING of the Senate of the University of Sydney was held on Monday, August 5, 1940.

The following appointments were made:

Dr. R. M. Rawle and Dr. S. L. Spencer as Tutors in Surgery at Sydney Hospital in the room of Dr. A. P. Findlay and Dr. A. L. Buchanan, who have been granted leave of absence on enlistment.

Professor J. C. Windeyer as a member of the Post-Graduate Committee in Medicine representative of the Royal Hospital for Women, in place of Dr. P. L. Hipsley (resigned).

Garland Lectureship in Animal Husbandry.—Mr. Hector John Geddes, M.Sc.Agr. (N.Z.), has been appointed as Lecturer in Animal Husbandry in the Faculty of Veterinary Science.

Diplomas.—The following diplomas were granted. Diploma in Psychological Medicine: Noel Edmund Barton Kirkwood, James Norman Main, Geoffrey Trahair; Diploma in Tropical Medicine: Colin George Burrowes Colquhoun, Jack de Vedas, Frank John Fenner, Joseph Lionel O'Connor, Arthur George Schroeder.

Corrigendum.

OUR attention has been drawn to an error in the leading article of August 3, 1940. On page 111, in the second column, reference is made, thirteen lines from the bottom of the page, to nodules in atrophic rhinitis; this should read atrophic arthritis. The title of the journal in the footnote should be *Annals of Internal Medicine*.

Nominations and Elections.

THE undermentioned has applied for election as a member of the Tasmanian Branch of the British Medical Association:

Ashbarry, Reginald Ernest, M.B., B.S., 1936 (Univ. Sydney), Cygnet.

The undermentioned have applied for election as members of the South Australian Branch of the British Medical Association:

Biofeld-Moody, Arthur John, L.M.S.S.A., 1925 (London), M.R.C.S., L.R.C.P., 1925 (London), 391, Esplanade, Henley Beach.

Lum, Laurence Claude, M.B., B.S., 1939 (Univ. Adelaide), Adelaide Hospital.

The undermentioned has been elected a member of the South Australian Branch of the British Medical Association:

Goode, Henry Arthur, M.B., B.S., 1939 (Univ. Adelaide), Buxton Street, North Adelaide.

Diary for the Month.

AUG. 20.—New South Wales Branch, B.M.A.: Ethics Committee.
AUG. 21.—Western Australian Branch, B.M.A.: Branch.
AUG. 22.—New South Wales Branch, B.M.A.: Clinical meeting.
AUG. 23.—Queensland Branch, B.M.A.: Council.
AUG. 27.—New South Wales Branch, B.M.A.: Medical Politics Committee.
AUG. 28.—Victorian Branch, B.M.A.: Council.
AUG. 29.—New South Wales Branch, B.M.A.: Branch.
AUG. 29.—South Australian Branch, B.M.A.: Branch.
AUG. 30.—Tasmanian Branch, B.M.A.: Council.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associate Friendly Societies' Medical Institute; Proserpine District Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

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